THE JOURNAL

OF THE

OKLAHOMA STATE MEDICAL ASSOCIATION

VOLUME XXV MUSKOGEE, OKLAHOMA, SEPTEMBER, 1932. NUMBER 9

TRACHEOTOMY—ITS INDICATIONS AND MANAGEMENT*

L. C. McHENRY, M.D.
OKLAHOMA CITY

The classification of tracheotomy as high, medium and low is obsolete. With two exceptions, the low tracheotomy is the only one justified in modern practice. In life-saving emergencies a stab through the cricothyroid membrane or any similar procedure is of course justified. The second exception is the preliminary tracheotomy before a laryngectomy where we wish to preserve all of the trachea possible for later use in attaching it to the skin.

The cases in which tracheotomy is indicated may be classified in four groups. The first group, by far the most common, contains those cases with an obstruction of the larynx. This may be due to paralyses, inflammations, infiltrations, impacted foreign bodies and pressure from outside the airway.

A second group of cases are those in which we wish to perform extensive operations about the neck and head. We call this the group in which a tracheotomy is expedient, that is, it enables us to prevent foreign material from getting into the air passages and allows for free breathing and better anesthetic control.

The third group consists of those small children and infants who have movable foreign bodies in the trachea. Myerson has stated that he uses a tracheotomy in all cases with round or ovoid movable foreign body in the trachea. He justifies this procedure as follows. A foreign body moving up and down in the trachea soon causes considerable inflammation in the spongy subglottic tissues. With this area already inflamed, the trauma incident to tracheoscopy or bronchoscopy coupled with the manipulation often necessary in obtaining a grasp upon and removing such large foreign bodies is more liable than not to cause an increase of swelling which necessitates a tracheotomy anyway. His second reason is that such foreign bodies are much more easily removed through an opening in the trachea, in fact the foreign body will often be coughed out spontaneously when the trachea is held open.

The fourth group in which tracheotomy is indicated are those infants who have a severe tracheobronchitis with profuse secretions such as we see in vegetable foreign body cases. Here the proper management of the tracheotomy is an essential accompaniment of the initial operation. These will be discussed more completely later on.

While we are discussing indications it is well to mention instances where it is not advisable to perform tracheotomies though we are sometimes urged to do so. These are in patients who are seriously ill with some condition which incidentally causes a partial or an apparent obstruction of the larynx. Recently a consultation as to the advisability of tracheotomy was requested on a patient in the University Hospital. This was a woman about sixty years of age who weighed about 250 pounds. There was an inspiratory stridor, with indrawing at the supraclavicular region, the xiphoid and the intercostal spaces, obviously a severe respiratory distress. On questioning the interne and examining the chart it was found that she had been a severe diabetic for several years, had high blood pressure, had recurrent signs of cardiac decompensation and had just entered the hospital that day with an acute sore throat. There was pale bluish edema of the pillars and soft palate and extensive ulceration over both tonsils with a dirty gray membrane. The blood count gave a typical picture of agranulocytic angina. Indirect laryngeal examination revealed that the edema in the throat had not involved the larynx. Obviously the respiratory distress was due to the extremely toxic condition and not to laryngeal obstruction.

In local inflammations about the mouth

*Read at Annual Session, Oklahoma State Medical Association, Tulsa, May 26, 1932.

and throat where there is definite encroachment upon the airway it is sometimes not advisable to perform tracheotomy because this would open up the deep tissue planes of the neck as avenues for infection. In such cases, a Ludwig's angina for instance, Myerson advocates intubation with a large silk woven catheter. The proximal end of this may be fastened to the skin of the face and it is sufficient to maintain an airway until the surgeon can drain the pus and let the edema subside. An esophageal feeding tube is also of very great value.

It is well to remember that in many severe dyspneas where the accessory muscles of respiration are called into action there may be retraction of the intercostal spaces, the suprasternal notch and the xiphoid without any mechanical ostruction of the upper airway.

The previously mentioned fourth group, where tracheotomy is indicated, is typified by those infants who have had a foreign body in the trachea or large bronchi and have developed a tracheobronchitis with profuse secretions. These usually have in addition, edema of the glottis and subglottis following removal of the foreign body by bronchoscopy. Here placing of a cannula in the trachea is only the beginning of the treatment. The two following cases illustrate the importance of proper management.

Case 1. A white female child, aged 8 months. One week before admission she had aspirated a watermelon seed. She had had restlessness, wheezing respiration and frequent attacks of coughing accompanied by cyanosis with all symptoms worse the two days before admission. The watermelon seed was rather easily removed from the trachea after a great deal of mucus had been aspirated through the bronchoscope. No anesthesia was used. She was returned to bed, placed in a croup tent and given steam inhalations with compound tincture of benzoin 20 minutes of every hour. The dyspnea and distress were greatly relieved for about six hours but then became gradually worse with signs of moisture in the chest which she did not seem to be able to expel by coughing. Atropine was given hypodermically without relief. As the dyspnea gradually became more marked she developed inspiratory indrawing at the neck and epigastrium. Tracheotomy was performed eight hours after removal of the foreign body. When the trachea was opened a bronchoscopic aspirating tube was passed into the trachea and main bronchi and a large amount of mucus removed. A No. 1. Jackson cannula was placed in the trachea. The steam inhalations were continued and a small tonsil suction pump was placed at the beside with a catheter attached which was small enough to pass easily through the tracheotomy tube without completely blocking it. The nurse was shown how and instructed to pass this into the tube whenever she could hear mucus in the trachea and to clean the inner tube as often as necessary. Aspiration was done every fifteen to thirty minutes during the first night. In spite of this, the next morning the tube was almost plugged with dried mucus and the baby was taken to the operating room where the tube was removed and the trachea and main bronchi aspirated with a bronchoscopic suction tube. This procedure had to be repeated twice that day, twice on the second and third days and once on the fourth day and fifth days. The temperature rose to 105 on the first day after tracheotomy and then gradually fell, reaching normal on the fifth day. A half cork was placed in the tube on the sixth day and a full cork on the seventh day. The tube was removed on the eighth day. Recovery thereafter was uneventful.

Case 2. A white male baby of 10 months, brought to the hospital with a history of having a severe strangling and choking attack three days previously while playing on the floor with a small tin spoon. The mother found the handle of the spoon on the floor after the attack. He had no treatment except castor oil and they brought an X-ray to the hospital with them showing an irregular shaped metallic foreign body in the region of the right main bronchus. At bronchoscopy, done without anesthesia, this was found in the right bronchus with a ragged upper border at the level of the carina. There was considerable difficulty in getting the foreign body through the larynx and probably some laceration of the subglottic tissues by the sharp corners of the upper edge of the tin where it had broken from the handle. For twelve hours following operation there was no respiratory difficulty except spells of coughing with wheezing during the attacks. Then there was a rise of temperature and rate of respiration with gradual development of restlessness, inspiratory difficulty and signs of moisture in the chest. Tracheotomy was performed about sixteen hours following bronchoscopy. The same apparatus for keeping the tube clean was used as in the other case. The next day the temperature rose to 105 and there were signs simulating pneumonia over the right middle lobe. The white count at this time was 15,600 and 62% neutrophils. He was taken to the operating room three times on this date and secretions aspirated from the right bronchus. On the next day the signs over the middle lobe had cleared and by the third day the temperature had dropped to 101. Except for a rise to 103 on the sixth day, when the tube became plugged during the night, the temperature then gradually came down to normal. The procedure of aspirating the trachea and bronchus was carried out twice daily for three days and once daily thereafter. The tube was corked on the eighth and removed on the ninth day following tracheotomy.

While we all know that tracheotomy ordinarily requires no such elaborate after care, these two cases would certainly have died had we not taken pains to keep the plumbing open after we had installed the pipes.

Under the term "management" of tracheotomy cases the following measures are those which have been found most useful.

1. Frequent removal and cleansing of the tracheal cannula. Simple cleansing of

the inner cannula will not suffice in cases with profuse secretions, as even the outer cannula becomes closed with dried mucus. This must be done as often as the tube becomes obstructed and cannot be done readily if the skin incision is closed with sutures. The other reason for not suturing these wounds is that they are all infected and suturing prevents proper drainage.

2. A mechanical suction pump should be at the bedside constantly. Equipped with a small catheter which may be introduced into the trachea without trauma, it is invaluable. The pump is of no use unless someone is there to use it, hence a good nurse is also invaluable. If we are not able to keep the trachea and bronchi clear of secretions by suction through the tracheal cannula it is necessary to remove the cannula and pass a bronchoscopic suction tube into the main bronchi. If this is not sufficient the bronchoscope may be passed in the same manner and the obstruction cleared with forceps if necessary.

3. Many authors use an oxygen tent routinely for every infant who has had a bronchoscopy and feel that by its use they avoid a certain percentage of tracheotomies. They also use it for all tracheotomized cases and feel that in slowing the rate of respiration it allows better elimination of secretions.

4. The use of steam inhalations with or without compound tincture of benzoin aids immensely in preventing drying of secretions.

5. We should use all measures possible to encourage the formation of secretions and keep them fluid. The natural reaction of the infected and inflamed tracheobronchial mucosa is the outpouring of mucus. This formation must be encouraged and its removal facilitated. Hence we should use no atropine and no morphine or codeine. The first tends to make the secretions dry and the latter two obtund the cough reflex. If atropine is used or if the secretions dry without atropine hard crusts form which act as foreign bodies. Clerf has reported a case in which he performed fourteen life-saving bronchoscopies. The first was for the removal of a foreign body and the others for the removal of dried masses of secretion. Fluids should be given in large amounts by whatever method necessary. The use of expectorants such as ammonium chloride and syrup of ipecac are very helpful.

In individual cases we may need all of the above measures or we may need none of them. Their use depends, of course, upon the indications in each particular case.

604 Medical Arts Building.

ABERRATIONS OF EYES AND LENSES

In an historical review of the various forms of aberration of the eyes and of lenses, Edward Jackson, Denver (Journal A. M. A., Aug. 6, 1932), calls attention to the fact that spherical aberration, mentioned in all books on optics, is the insurmountable obstacle to ideal lenses. It has not been given the simple, comprehensive explanation that recognizes its dependence on obliquity of surface. On account of it, a perfect spherical lens never can give a perfect focus. Because it is the easiest to grind, the spherical form has been used for lenses from the time of the old gem grinder of Babylonia. Mathematicians who have studied optics have suggested other forms of surface that could furnish perfect or ideal focusing of light, but these have not proved practicable for any general use. It is almost impossible to produce exactly the surfaces planned, and if they were exact, slight movement of the eye from the designed axis of the lens would destroy any advantage it was expected to have. The aspherical lens of Gullstrand is an attempt in this direction. However, any one who has worked with it knows how exactly it must be placed to get the slight advantage it is supposed to have over a planospherical lens. Spherical aberration has been chiefly overcome in optical instruments by partly neutralizing the aberration of one lens by that of another. This was the plan used by Huygens in the eyepiece for the compound microscope that is known by his name. When the prescribing of glasses for hyperopia and astigmatism began, the opticians were fairly familiar with the effects of aberration in strong glasses and had a practical understanding of the importance of reducing obliquity of refracting surfaces. The empiric rules of turning the convex, or more convex, surface from the eye and the concave, or more concave, surface toward the eye were followed by the more competent opticians. To make this plan more effective, periscopic lenses having a base curve of 1.25 D. were put on the market as soon as the metric system of numbering was adopted. Later the so-called toric form, with a base curve of 6.50 D., was widely adopted. Still later, lenses still more strongly menisciform were introduced under copyrighted names, and extravagant claims of their superiority were pressed on the attention of ophthalmologists and the public by specious advertisements. The essential precaution to prevent and limit the aberration of oblique surfaces is to keep these surfaces as nearly perpendicular as possible to the rays that pass through them. The prism must be kept near its position of minimum refraction, the rays in the prism falling perpendicular to the plane that bisects its refracting angle. With lenses the rays should be as nearly as possible perpendicular to a theoretical or assumed curved surface, half-way between the two refracting surfaces of the lens. An understanding of this will make one safe from unjustified claims of superiority made by eager salesmen for the lenses they wish to sell.

TUMORS OF THE NASO-PHARYNX

WM. L. BONHAM, M.D.
OKLAHOMA CITY

Tumors of the naso-pharynx present a most interesting and frequently a most difficult problem to the rhinologist, not so much from the standpoint of diagnosis, for that is often comparatively easy, but more so from the point of view of successful treatment, which is often by far more difficult.

CLASSIFICATION

Naso-pharyngeal tumors may be classified as connective tissue tumors and epithelial tumors. The connective tissue tumors may be divided into the benign and the malignant, the benign including the fibromas, angiomas, myxomas, chondromas, osteomas, polyps and endotheliomas and the malignant including the sarcomas and the lympho-sarcomas. The epithelial tumors likewise may be divided into the benign and the malignant, the benign tumors being the adenomas, and the malignant tumors the adenocarcinomas and the medullary squamous cell carcinomas. In a review of thirty cases of tumors of the naso-pharynx taken from the records of the Department of Oto-laryngology at the University of Michigan Hospital and two cases from the Department of Oto-laryngology of the University of Oklahoma Hospital, I found only fibromas, sarcomas, fibro-sarcomas, lympho-sarcomas, carcinomas, and one case each of myxo-chondroma, endothelioma, and granuloma pyogenicum angiectatum. G. B. New[1] records a case of actinomycosis of the naso-pharynx, while Bulson[2] records a case of teratoma of the throat with attachement just above and behind the tonsil and Beattie[3] reports a case of blasto-teratoma or mixed tumor of the naso-pharynx. However, in this article I will attempt only a discussion of the new growths, thus omitting the chronic infective granuloma and the teratoma.

FIBROMAS

The majority of naso-pharyngeal fibromas occur in individuals between the ages of ten and twenty-five years, the youngest in the series studied being four and the oldest twenty-eight years of age. These tumors are confined almost entirely to the male, occurrence in the female being very rare. They are almost always single.

Clinically there are two types of fibromas, the fibroma molle (soft) and the fibroma durum (hard). In color they vary from a pink to a dark reddish-blue; their consistency is firm; and their shape after they attain an appreciable size conforms to the shape of the naso-pharynx. They vary in size from a small growth situated in the vault of the naso-pharynx or in the region of the fossa of Rosenmuller to a large growth completely filling the naso-pharynx, involving the sinuses and extending far into the nares. Their growth is rapid but they do not metastasize or involve neighboring glands. They are only locally malignant and tend to recur after removal. Their point of origin may be the spheno-ethmoidal recess, the anterior surface of the base of the occipital bone[3], the fossa of Rosenmuller, the pterygoid process[4], the orifice of the eustachian tube or the cushion of the tube[5], and the sphenoid, ethmoid or maxillary sinuses. The most common site of origin is from the periosteum covering the basilar process of the occipital bone, and from the body of the sphenoid sinus. Goldsmith[4] states that since fibromas are of periosteal origin the majority of fibromas tend to cease growth and undergo retrogressive changes after the age of twenty-three, by which time active periosteal growth had terminated, and the skull has ceased to develop.

In general, the symptoms produced by fibromas of the naso-pharynx are the result of obstruction and pressure[3]. Complete or partial nasal obstruction and severe hemorrhage are the rule. Deafness, tinnitus, otalgia, and otitis media are frequently the result of pressure on the eustachian tube. Any or all of the sinuses may be invaded. If the extension is sufficient to produce pressure on the optic nerve, optic atrophy will result. Exophthalmos from invasion of the orbit occurs late. Diplopia may occur as a result of pressure on the third or sixth nerves or it may be due to exophthalmos. Difficulty on swallowing may occur in cases in which the tumor has extended into the oro-pharynx. In this series of cases of fibromas, 100% of the patients complained of nasal obstruction; 75% had hemorrhage of varying degree; 50% complained of nasal discharge; 25% had exophthalmos and limitation of extra-ocular movements; 25% had swelling of the cheek; 25% had pain somewhere about the face or head; 16⅔% had ear-ache; none had any difficulty on swallowing, and none had discharging ears at the time they were first seen.

The symptoms in the cases of granu-

loma pyogenicum angiectatum, myxochondroma, and endothelioma were the same as might be produced by a fibroma, and the tumor masses were of about the same size and had the same general appearance as the majority of the fibromata.

CARCINOMA

The frequency of carcinoma of the naso-pharynx is greater than is commonly supposed, and such tumors are frequently not attended by any striking symptoms or marked discomfort to the patient until they have reached a very appreciable size. G. B. New[3] reports that 50% of malignant tumors of this region occur between the ages of forty-one and sixty years. The ages of those seen in our clinic varied between thirty-eight and sixty-four years, which closely agrees with the observations of Dr. New.

Carcinomas of the naso-pharynx may be small non-ulcerating or ulcerating epithelial growths situated in the vault of the naso-pharynx or laterally in Rosenmullers' fossa[6], either unilateral or bilateral, or they may be larger cauliflower growths extending down the lateral angles of the pharynx. The first glandular involvement in malignancy of this area is usually high in the cervical region.

The symptoms produced by carcinoma of the naso-pharynx, like those of any other tumor in this region may be quite varied due to the close relationship of the naso-pharynx to the 2nd, 3rd, 4th, 5th, 6th, 9th 10th 11th and 12th cranial nerves, gasserian ganglion, sella-turcica[6], eustachian tube, the nose proper, and the pharynx proper, and to the lymphatic drainage into the cervical glands. Among the most common of these symptoms are sore throat, dysphagia, hoarseness, blood streaked saliva, deafness, tinnitus, otalgia, diplopia, and cervical adenitis. Van Meter[8] states that the cranial nerves are usually involved. I found no one constant symptom in carcinoma of the naso-pharynx, but 80% of our cases in this class complained of varying degrees of chronic sore throat; 80% had involvement of the cervical glands; 60% had lost weight. Beyond this the symptoms were quite variable.

SARCOMA

Sarcoma of the naso-pharynx occurs somewhat less frequently than fibroma. Such growths may be found at almost any age, the youngest in our records being five years and the oldest fifty-six years.

Sarcomas[7] have much the same general appearance as fibromas, are of connective tissue origin, spread toward the mucous surface first, and involve bone only a later stage. They are rather soft, very vascular, metastasize late, and show a great tendency toward spontaneous hemorrhage.

The symptoms produced by sarcoma of the naso-pharynx are those that might be produced by either fibroma or carcinoma. A review of our cases of sarcoma showed that 78% complained of nasal obstruction; 45% complained of pain; 45% had metastasis to the cervical glands; 33% had proptosis, limitation of extra-ocular movements and swelling over the cheek; only 23% gave a history of hemorrhage.

Due to the relatively large size of the tumor with its attendant symptoms produced by obstruction and pressure, and also due to the frequency of hemorrhage, fibromas, sarcomas and other connective tissue tumors are usually diagnosed without much difficulty. However, it is my opinion, that small epitheliomas of the naso-pharynx are frequently overlooked. I feel that there are a few patients who come to the office or to the clinic complaining of chronic sore throat, and on examination a pair of chronically infected tonsils is found, the examination of the naso-pharynx is neglected, and a tonsillectomy is advised. Within a few weeks to a few months following the tonsillectomy, the patient again returns to us complaining, in addition to the chronic sore throat, of blood streaked saliva and possibly of some swelling of the glands of the neck. On careful examination of the naso-pharynx, a small epithelioma is found laterally in the region of the fossa of Rosenmuller or in the vault of the naso-pharynx.

By this time, metastasis has already taken place and the implantation of radon seeds or radium needles in the primary lesion is of little or no value. If, however, at the time the patient first consulted us because of his chronic sore throat, a careful examination of the naso-pharynx had been done and the malignancy discovered before metastasis had taken place, a cure might possibly have been effected, provided this were the radio-sensitive type of lesion. For this reason, I believe that a most meticulous examination of the naso-pharynx should be performed in all patients complaining of chronic sore throat or a chronic naso-pharnygitis.

TREATMENT

There are only two methods of treatment of tumors of the naso-pharynx, *viz.*,

surgical removal and the application of radium and X-ray. Radium and X-ray as a primary course of treatment have only one application, and that is in carcinomas of this region, where metastasis takes place early and surgery is absolutely hopeless. Secondary, X-ray and radium are of value in cases of any other type of tumor which tends to recur after operation. The dosage of radium and X-ray varies with each individual case. Van Meter[8] has used as much as 900 mg. hrs. of radium in the post nasal space for post nasal carcinoma. Mertens[8] recommends 50 mg. hrs. of radium for each c.c. of tumor tissue. Colwell[10] of London, reports a case of apparent cure of lymphosarcoma of the naso-pharynx six and one-half years after treatment. He used two 50 mg. tubes of radium bromide for 6 hours, repeated X-ray treatments, radium again in 17 days and then further X-ray treatments.

Of all forms of radium, I believe the most convenient to use are the radon seeds, which are either platinum, gold or glass seeds impregnated with radium energy. By means of special introducers provided with a stylette, these seeds are planted into the tumor mass approximately 1 cm. from each other and not closer than 1 cm. to any vital structure. The platinum seeds are attached to threads which are fastened to the side of the cheek with adhesive tape after insertion. They are 3 millicurie seeds. The dosage is the one-half value period (4 days) of a 3 millicurie seed. The gold and glass seeds are 1½ to 2 millicurie seeds and are allowed to remain in place indefinitely. The advantage of the platinum seed is the greater accuracy in determining the dosage that the patient receives.

Another form of radium which is rather convenient to use is the radium needles, the dosage varying with the size of the lesion. X-ray therapy of the naso-pharynx and of the neck should follow in a week or 10 days, the dosage and the manner of application varying with each individual case and being decided upon only after an initial application.

The only satisfactory treatment of new growths of the naso-pharynx other than carcinomas, however, is surgical removal. Several such procedures are in practice, but the one which we have used chiefly in fibromas, sarcomas etc., is the avulsion of the tumor with a pair of broad bladed, strong uterine grasping forceps. After the blades have firmly grasped the tumor behind the soft palate, forcible traction and rotation are applied. If multiple or if pieces of the tissue remain behind, the submucous biting forceps or Knight's polypus forceps are used to remove the remaining tissue through the nose. The hemorrhage is frequently quite profuse, especially in fibromas and sarcomas, and is occasionally a source of considerable annoyance as well as danger. Shock in these cases may be quite marked. Preliminary laryngotomy has been suggested to prevent the blood getting into the trachea[4] and preliminary ligation of the external carotid artery is occasionally done. Likewise, Maitland's clamp[11], a modification of Criles forceps for temporary clamping of the common carotid artery is used, this clamp being encased in soft rubber to avoid injury to the vessel. Another operative procedure which may be used when the tumor is sessile and cannot be removed by avulsion is Kocher's Osteoplastic Flap Method[12]. If the tumor involves the ethmoid and sphenoid sinuses a radical exenteration of the ethmoid and sphenoid by the external route is imperative, while if the antrum is involved the Caldwell-Luc operation is employed. In certain cases, it may be necessary to enter the pterygo-maxillary fossa due to invasion of this fossa by the tumor. Extension of the tumor into the orbit necessitates orbital exenteration.

COMMENT

1. As a general rule, tumors of the naso-pharynx occurring in young individuals are more likely to be connective tissue tumors.

2. Diagnosis is extremely easy except in the case of small epitheliomas which may be missed unless the naso-pharynx is examined carefully.

3. The prognosis for life in the non-malignant type of tumor is fairly good, especially if a relatively early diagnosis is made; the prognosis for life in the malignant type of tumor is poor.

4. The treatment for all tumors except carcinoma is surgical, the type of operation depending on the location and extent of the tumor; this is followed by radium and X-ray if indicated. Radium and X-ray alone are indicated in carcinoma of this region, as surgery here is hopeless.

CASE REPORTS

Case No. 1. This boy, age 11, entered the University of Michigan Hospital with a painless swelling over the left cheek, proptosis of the left eye, a large firm red mass in the naso-pharynx, and a history of frequent epistaxis. The biopsy

report stated that this was an ulcerating granuloma pyogenicum. The tumor extended into the antrum, orbit, spheno-maxillary fossa, nose and naso-pharynx. At the first operation, February 18, 1926, the tumor was removed from the naso-pharynx, and a left radical antrum operation was performed. The homorrhage was very profuse, the operation was stopped and a blood transfusion was given the patient. On January 29, 1927, a recurrence of the tumor in the naso-pharynx was removed by avulsion. On April 30, 1927, the left external carotid artery was ligated, an incision was made through the left eye-brow and down over the temporal region toward the ear for a distance of two inches beyond the external canthus, the spheno-maxillary fossa was exposed, the zygoma first being removed, and the tumor was removed as thoroughly as possible, but was found to extend into the orbit, and down about one inch to the naso-pharynx. The operation was stopped with the pedicle of the mass still in the orbital cavity. On October 5, 1927, an exenteration of the left orbit was attempted, but the hemorrhage was so profuse that the operation was abandoned, and then completed five days later. Again on January 23, 1928, small piece of post-nasal tumor was removed. Radon seeds were inserted into the small piece of remaining tumor on February 8, 1928, and four days later the seeds were removed. The patient was discharged with no evidence of recurrence.

Vigorous X-ray therapy was later instituted. He returned to the hospital on June 6, 1929, with a recurrence the size of a walnut in the left naris and naso-pharynx. The department of roentgenology believed that further X-ray or radium therapy was contra-indicated due to the previous strenuous treatment, thus leaving us no alternative but further operative procedure. This operation was performed and the patient discharged from the hospital in good condition a few days later.

Case No. 2. This patient, a boy 17 years of age, entered the hospital June 5, 1929, complaining of nasal obstruction which had been present for several months. The tonsils and adenoids had been removed two and one-half months previously with no relief. Examination showed a large firm mass completely filling the naso-pharynx and obstructing the left naris posteriorly. There was also slight swelling in the left alveolar-buccal area posteriorly. X-ray examination of the sinuses showed both antra and the left ethmoid air cells to be cloudy. On June 19, 1929, the tumor was removed from the naso-pharynx by avulsion, with practically no hemorrhage. The Pathology Department reported the tumor to be a "fibroma with many thin walled dilated blood spaces, a true neoplasm, but without malignancy in areas examined, and will recur if not entirely removed." The patient was discharged on June 29, in a satisfactory condition.

On December 5, 1929, the patient returned to clinic with a recurrence of the tumor in the naso-pharynx, and with a large firm swelling in the left cheek, the mass extending back to the region of the sphenomaxillary fossa. There was also a definite proptosis of the left eye. X-ray examination of the sinuses showed only a haziness of the left antrum, and no evidence of destruction of the floor of the orbit. The department of ophthalmology reported the fundus examination to be negative except for a swelling of one diopter in the left eye. The exophthalmos measured 15 m.m. O. D. and 23 m.m. O. S.

On December 14, 1929, the second operation was performed. An incision was made through the mucous membrane of the cheek just posterior to the orifice of Stenson's duct. The tumor was gradually separated from the surrounding structures and traced back to the spheno-maxillary fossa where it was joined with the original mass in the naso-pharynx through the spheno-maxillary fissure. After the mass in the cheek and spheno-maxillary fossa had been removed as thoroughly as possible the recurrence in the naso-pharynx was removed by avulsion with Jackson's forceps. The hemorrhage was profuse. Three large packs were used, one in the cheek, one in the naso-pharynx, and one in the nose. The Pathology Department reoprted the specimen to be an "angio-fibroma, not cellular enough to be called a sarcoma, rather a fibroma durum." On December 28, 1929, the patient was discharged from the hospital in good condition.

Case No. 3. This boy, age 13, was admitted to the Ophthalmology Department of Crippled Children's Hospital at Oklahoma City on July 20, 1931. He gave a history of diplopia beginning in March, 1931, and about two weeks following the onset of the diplopia, it was noticed that the left eye-ball was protruding. The proptosis had increased rapidly. There was no history of pain, dysphagia, hemorrhage, or nasal obstruction. The vision was good in both eyes. On July 29, 1931, I saw this patient at the request of the Ophthalmology Department. There was a proptosis of the left eye with limitation of extra-ocular movements in all direction. The tonsils were hypertrophied and the naso-pharynx was negative except for hypertrophied adenoids. The right nostril was negative while in the left nostril was a rather large firm yellowish-red mass arising from the region of the middle meatus anteriorly. The ears were negative. X-ray studies of the nasal accessory sinuses showed a cloudiness of the left antrum and ethmoids. A tentative diagnosis of fibroma or fibro-sarcoma of the left ethmoid labyrinth, antrum and orbit was made. A biopsy taken on July 31, 1931, was reported as sub-acute inflammation, either tuberculosis or syphilis, and a biopsy on August 10, 1931, was reported as sub-acute inflammation. The blood and spinal fluid Wassermanns were negative. Physical examination and X-ray showed no evidence of tuberculosis.

On August 20, 1931, a biopsy of the tumor in the orbit was done and a frozen section made. The report was still that of sub-acute inflammation. A radical ethmoid, sphenoid and antrum operation was immediately performed by the external route. The firm tumor was found to fill the ethmoids and the medial and inferior portion of the orbit and to extend from the posterior surface of the eye-ball to the apex of the orbit. The floor of the orbit was eroded and the antrum filled with the tumor. The ethmoids were completely exenterated and all of the tumor which could be palpated in the orbit was removed. The usual Caldwell-Luc operation was done and the same type of tumor was removed from the antrum. The pathological diagnosis was that of epulis or giant cell sarcoma. The convalescence was uneventful, and after radium and X-ray therapy, the patient was discharged from the hospital on September 21, 1931, with a marked decrease in the proptosis. On October 19, 1931,

I again saw this patient. The degree of exophthalmos was no more marked than when he was discharged from the hospital and was much less than previous to operation. There was a rather marked fullness at the site of the scar, but this was to be expected. On April 25, 1932, there was no further change in his condition and no evidence of recurrence. The vision in both eyes was normal except that there was a slight diplopia.

1. Two Unusal Naso-pharyngeal Tumors (G. B. New) Laryngoscope 32:99-102, February, 1922.

2. Teratoma of Throat (A. E. Bulson, Jr.) Archives of Otolaryngology, March, 1926.

3. Radium Treatment of Fibromata (P. S. Mertins) Southern Medical Journal, September, 1928.

4. Naso-pharyngeal Fibromata, Clinical and Pathological Study (P. G. Goldsmith) J. Laryngol. and Otology, October, 1924.

5. Naso-pharnygeal Growths (W. Milligan) J. Laryngology and Otology, October, 1924.

6. Syndrome of Malignant Tumors of the Naso-pharynx, A Report of 79 Cases. (G. B. New) J. A. M. A., July 1, 1922.

7. Sarcoma of Naso-pharynx (D. C. Montgomery) New Orleans Med. and Surg. Journal, Jan., 1926.

8 Intranasal Radium Therapy in Malignant and Benign Tumors (E. R. Van Meter) Arch. Otolaryngol., March, 1927.

9. Principles of Pathologic Histology (Mallory).

10. Lymphosarcoma of Naso-pharynx Treated with Radium and X-rays; case (H. A. Colwell) Lancet, February 26, 1927.

11. Fibroma of Naso-pharynx, Operative Treatment (Brady) Journal Laryngol. Rhin, and Otol. May, 1916.

12. Kocher: Textbook of Operative Surgery, Vol. 2.

13. Fibroma of Naso-pharynx; report of 32 cases (G. B. New and F. A. Figi) Annals Otol. Rhinol. & Laryngol,, March, 1925.

THORACOPLASTY IN PULMONARY TUBERCULOSIS: GENERAL AND ECONOMIC CONSIDERATIONS

Kennon Dunham and Eslie Asbury, Cincinnati (Journal A. M. A., July 30, 1932), points out that thoracoplasty and phrenicectomy are established adjuncts to the treatment in selected cases of pulmonary tuberculosis. Positive sputum is the chief indication for thoracoplasty in cases otherwise suitable. Continuation of positive sputum after thoracoplasty indicates need of further collapse. The sputum may continue positive after complete collapse or become negative with incomplete collapse. In any case, the only criterion of a successful thoracoplasty is a living patient with continuously negatixe sputum. The authors suggest a plan to give the benefit of surgical procedures to both private and indigent patients with pulmonary tuberculosis, and stress the economic value of thoracoplasty. They make a plea for further study of the effort syndrome in prospective thoracoplasty patients and of the cause of the occasional operative death within the first forty-eight hours. Cardiac damage and emphysema of the good lung should be estimated before operation. The Wilms-Sauerbruch technic of paravertebral thoracoplasty in two stages is recommended, removing portions of ten ribs, including the first, as close to the transverse processes as possible, taking the lower ribs at the first stage. The use of acacia instead of the transfusion of blood is recommended to combat shock because of its safety, reliability and cheapness.

BILATERAL ORBITAL ABSCESSES FOLLOWING SINUSITIS—CASE REPORT*

FRED S. CLINTON, M.D., F.A.C.S.
BENJ. W. WARD, M.D.
TULSA

We believe that the unusual character of the case we are reporting makes its recording worthwhile and that it offers points of interest from several angles—diagnostic and otherwise—to the general surgeon which justified its presentation to this section, particularly since it is the general practitioner or general surgeon who sees such cases first rather than the specialist.

CASE REPORT

J. D. P., a white schoolboy of 15, left school at noon on October 30, 1931, because of a severe headache in the back part of his head. Some fever was believed present, amount not determined. A physician was called who referred the patient to an eye, nose and throat specialist on the following day when the headache and fever persisted. Examination by the specialist revealing no abnormalities, the boy returned home and continued to suffer from unremitting headache of such severity that repeated doses of morphia had little effect. Fever and chilly sensations continued daily. There was no vomiting or dizziness. On November 6, 1931, a shiny, red spot appeared at the root of the nose and spread with some rapidity over both infraorbital regions. Another physician was then summoned and immediately made a diagnosis of facial erysipelas. Accordingly, treatment with ice packs, antistreptococcal vaccine in large, repeated doses and ichthyol dressings was instituted until November 12. By this time the entire scalp had become enormously swollen, both eyes closed, and eyeballs protruding, a purulent, bloody discharge present from both nares; cheeks, upper lip and forehead much swollen. Repeated chills and fever to 103.5 degrees occurring daily. This condition persisted with the patient's general condition growing steadily worse until the afternoon of November 17, when he was first seen by us.

The patient's past history was not significant, measles and chicken-pox occurred in childhood. No previous complaint of discharging or painful ears; patient's mother declared he had never suffered from head colds or sinus trouble. Beyond smoking of about a pack of cigarettes daily, habits were good, appetite and digestion excellent, elimination normal, no nervous disorders or headaches had been present. Family history irrelevant.

Physical examination revealed a youth of apparently normal height for his age, 15, who showed evidences of recent, rapid emaciation. He lay still in bed and mumbled incoherently constantly and resented any attempt to examine him. Eyes were closed, respirations stertorous and about 32 per minute, pulse rate 120, regular and full. Temperature 103.2 degrees. Tendon and

*Presented at Oklahoma State Medical Association Meeting, Tulsa, Oklahoma, May 24-26, 1932.

pupillary reflexes present and normal, no pathological reflexes present.

The head was grotesque in appearance. It seemed to be almost twice normal size and because it was entirely encased in a layer of ichthyol which had to be scraped away little of the skin detail could at first be made out. Both eyes were truly exopthalmic, there was marked chemosis present on both sides. There was no corneal ulceration but the conjunctiva of both lower lids was ulcerated. Eyeballs could be slightly moved downward. Examination of the fundus revealed engorged veins of increased tortuosity but no other abnormalities. Media clear. The scalp and forehead presented a brawny oedema and numerous pustules. The root of the nose was very much broadened and swollen. The upper lip was about four times the size of the lower but presented no evidence of cellulitis. There was a dried sanguinopurulent discharge about both nares and examination with a speculum showed liquid pus in considerable quantities on both sides—the turbinates were reddened but otherwise normal. Mastoid regions were negative, both ears showed no abnormalities. The chest examination revealed no abnormalities but a quickened, stertorous respiration and a rapid pulse rate. Heart not enlarged. No oedema over neck or upper thorax. Abdomen and extremities presented no abnormalities.

The boy was removed to the hospital the same afternoon, being admitted with a tentative diagnosis of pan-sinusitis; cavernous sinus thrombosis versus bilateral orbital abscess originating from ethmoid cells; cellulitis of face and scalp. Supportive treatment was instituted and an ear, nose and throat consultant called. The consultant was unwilling to commit himself to a definite diagnosis, although agreeing that sinusitis was present and that there was no evidence of erysipelas. We had never heard of a case of bilateral orbital cellulitis or abscess following sinusitis although such cases following erysipelas have been reported so we made the alternate diagnosis somewhat apologetically.

Within 14 hours of admission, after repeated hypodermoclysis of normal saline, the patient became entirely rational, talked, smoked, and ate with apparent relish. Under hot, continuous packs of boric acid solution the swelling about the face had slightly subsided by the morning of November 10 and a portable X-ray examination of the sinuses was made. However, the swelling of the soft tissues and inability to get full cooperation of the patient resulted in no definitely abnormal X-ray findings. By the 20th the patient was able to open his eyelids a bit and was able to recognize relatives and describe objects quite clearly, bearing out our original opthalmoscopic observations. We felt more inclined than ever to discount the probabilities of cavernous sinus thrombosis and to believe that bilateral orbital abscesses were present. A purulent discharge from the nares continued and local treatment was used at the suggestion of our ear, nose and throat consultant to keep the mucous membranes shrunken. On the 20th both parotid regions became involved and there was considerable tenderness in the left mastoid region. However, examination disclosed no evidence of left middle ear pathology. On this date also an urticarial rash covered the patient's back and arms—probably a result of "serum reaction."

On November 22 four points of suppuration about the face were noted and drained. The acute parotitis continued and fever continued septic in type but patient remained rational and insisted on a generous diet and his cigarettes. On November 23 a stab wound at the outer canthus of the right eye drained about 3 drams of thick yellow pus from the right upper eyelid and temporal region. Smears and cultures were reported "gram positive diplostreptococcus." A drainage from the outer side of the left eyeball was noted in a rather profuse amount on this date and, smears and cultures showed a gram positive diplostreptococcus. A stab wound of the left parotid gland (Hilton technique) obtained no pus but relieved tension considerably.

On November 24 all drainage continued and the patient was mentally quite disturbed and complained of severe pain in the right ankle.

On November 25 under ethylene anesthesia Hilton technique was used to drain both orbital cavities through incisions at the inner part of the margin of the upper orbital rims—also at lower orbital rims. Profuse purulent discharge was obtained from all four incisions and rubber tissue drains were inserted. Our ear, nose and throat consultant felt that the patient's condition did not justify an attempt at exenteration of the ethmoid cells.

On November 26th the patient seemed considreably improved, diathermy was used to the parotid regions and the swelling began to subside. Drainage continued from all incisions about the orbits but the patient pulled our drains out and much difficulty was experienced in keeping the openings from healing.

On November 28 the blood culture made November 18 was reported positive with the finding of a gram positive diplo-streptococcus. A corneal ulcer began to develop on the right eye. All drainage continued and the left exophthalmus had almost subsided although the right was still marked. The septic temperature continued with a pulse rate of 130-148 constantly present. Complication we had long feared but anticipated became manifest on December 4th with evidence of lung involvement on the left side. X-ray plates showed evidence of metastatic abscesses in the left lung and our patient's general condition became very poor. From this date until the morning of December 11 when death occurred the outcome was never in doubt despite several remarkable rallies. Incisions had to be made in both temporal regions to drain pus which had evidently overflowed the orbital rim and gravitated to these regions. On December 9 a large amount of purulent material was discharged thru the left nostril and much of the swelling of the root of the nose disappeared. On this date also patient became aphasic and we concluded that metastatic brain abscesses were developing. Strangely enough by the morning of December 10 the head had resumed almost it's normal appearance and there was only a slight residual right exophthalmus. By this time however, both lungs were completely involved by pneumonia and the patient who had throughout displayed remarkable resistive and recuperative powers was overwhelmed.

From the laboratory standpoint there is nothing unusual to report. A positive blood culture was obtained, the leukocyte count rose gradually from 19 to 33,000 and the leukocytic index from 1.12 to 1.59. The offending organism was a diplo-

streptococcus. Unfortunately permission for an autopsy could not be obtained and post-morten X-ray pictures although made were not of any further assistance.

A survey of all the available literature fails to reveal a single case report of a bilateral orbital abscess following sinusitis although very many unilateral cases have been recorded. Following erysipelas, bilateral infection has not been such a rarity but the history of this case and all our findings are definitely against erysipelas and point unerringly to sinusitis as the exciting cause. There are three chief causes of orbital cellulitis[1]:

1. Nasal sinus infection.
2. Skin infections, *e. g.*, erysipelas, impetigo, bites, boils, etc.
3. Osteomyelitis or periostitis of the orbit from a blood stream infection. The prognosis is best in the cases whose etiology is in the first group, incidentally this group is the most important etiologically.

The ethmoid cells have been most often the original focus, the frontal sinuses being next and the maxillary very rarely. There seems to be four ways[2] by which orbital cellulitis and abscess can be developed from sinus infections.

1. By extension of the inflamed process through apparently intact bone.
2. By thrombosis of one of the large veins perforating bone and so spreading infectious material to the other side.
3. By direct extension of the ulcerative process to the bone with periostitis, osteitis, and finally necrosis with perforation.
4. Extension of inflammatory process through dehiscence in the bony wall.

One of the arresting features of the case is the fact that the orbital abscesses developed during the first acute attack of sinusitis this patient apparently ever had. Had there been a chronic sinus condition with gradual erosion the complications might have more easily been explained. However, we are of the opinion that the extension occurred either by venous thrombosis or by dehiscence.

The differential diagnosis from cavernous sinus thrombosis in this case was not so difficult as is usual. Babbit[3] declared that "a concluded diagnosis will frequently be reversed by autopsy findings." Of course we were unfortunately unable to obtain an autopsy but the actual findings and drainage of pus from both orbits proved conclusively that abscesses were present although we must admit the possibility of cavernous sinus thrombosis also being present. Babbit gives the differential diagnosis as follows:

1. Exophthalmus present in both but oedema of surrounding parts greater when orbital abscess is present—in our case there was marked oedema over a great area.
2. Rotation of eye upward, downward, etc., by inflammatory pressure in cases of orbital abscess—this does not necessarily occur in cavernous sinus thrombosis.
3. There may be diminished vision in both, usually greater in cavernous sinus thrombosis and fundus changes in this condition are retinal oedema, venous dilatation, clouded media, at times disc changes. In orbital abscess usually only venous congestion and increased tortuosity is found. Impairment of vision, if present, being due to retrobulbar swelling only.
4. Involvement in cavernous sinus thrombosis as, ptosis and pupillary dilatation due to oculomotor involvement; occasionally fixation of eyeball; papilledema. This does not occur in orbital abscess.
5. The orbital swelling has the brawny, indurated feel of cellulitis in cases of orbital cellulitis and abscess.
6. Septic symptoms are, of course, present in both and blood stream infection may be proved present in both although more usual in cavernous sinus thrombosis.

On the basis of the foregoing differentiation and our actual finding of pus in both cavities there could hardly be doubt as to the diagnosis. It was interesting in reviewing the literature to note that in several cases[4] the rhinologist failed to discover evidence of ethmoiditis, orbital

cellulitis developed and only at operation was pus found in the post ethmoid cells. Again, one case was reported[6] as erysipelas and ethmoid empyema found when orbital cellulitis had developed. Therefore one must be on guard to avoid these mistakes.

Treatment has been successful in many unilateral cases and has consisted in most instances of drainage of both the sinuses and the orbit[6,7]. Unfortunately our patient was seen almost in extremis when any radical procedure such as submucous resection and ethmoid cell exenteration, particularly bilaterally, would have been immediately fatal so our rhinologist had to content himself with local nasal treatment although we did secure good drainage of the orbits. It seems to us that prophylaxis in this as in all other conditions, is the best treatment. With symptoms such as our patient exhibited for days, careful X-ray examination of the sinuses was absolutely indicated. Once the diagnosis had been established drainage could have at once been instituted and the orbital complications forestalled. Once cellulitis does occur, immediate drainage of the orbit should be instituted. The upper, inner angle of the orbit is selected as the point of drainage Hilton technique being employed. It is necessary to avoid damaging the pulley arrangement of the superior oblique muscle in this locality.

1. Smith, E. T. Brit. Med. J. 2:14 (July 5), 1930.
2. Hajek, M. "Nasal Accessory Sinuses" Vol. I, pp. 107; Vol II, pp. 437.
3. Babbitt, James A. "The Diagnostic Problem in Orbital Cellulitis" Am. Otol., Rhin., and Laryngol. Vol. XXXIX, No. 2, pp. 444.
4. Norrie, F. H. B. "Orbital Abscess Secondary to Suppuration in the Posterior Ethmoidal Cells" Jour. of Laryngol. & Otol. Vol. XLII, No. 7, pp. 459 (July), 1927.
5. Theisen, Clement F. "Ethmoiditis in Infants and Young Children" Arch. of Otolaryngol. Vol. 8, pp. 386-398 (Oct.), 1928.
6. Stark, William B. "Three Cases of Orbital Abscess Secondary to Suppurative Sinusitis" J. Canadian Med. Assn. Vol. 18, pp. 423 (1928).
7. Scarlett, H. W., and Babbitt, J. A. Amer. Jr of Ophthal. Vol. 14, pp. 1158-59 (Nov.), 1931.

—o—

PHYSICAL CHARACTERISTICS OF HIGH FREQUENCY CURRENT

Allan Hemingway and W. K. Stenstrom, Minneapolis (Journal A. M. A., April 23, 1932), emphasize the fact that the small amount of physical knowledge acquired as a premedical student is likely to be temporarily forgotten under the overwhelming load of anatomy, chemistry, physiology and so on. It is for this reason that t ey commence their paper with a brief review of some of the fundamental principles of electricity that are applicable to the action of high frequency. They then give a detailed discussion of the applications of physical and chemical theory in diathermy and the methods and clinical use of short wave therapy (radiotherapy).

THE EXAMINATION OF THE EARS IN INDUSTRIAL CASES

T. G. WAILS, M.D.
OKLAHOMA CITY

This paper is written with the idea of giving a resume of the ear examination of industrial cases, with special reference to exaggerators and malingerers.

There are three general types of cases referred for examination, where more than average care is needed to prevent industrial corporations or insurance companies from being unjustly imposed upon by unscrupulous lawyers and their accomplices.

The first type is that of the laborer who has a defect, such as an old suppurative media and goes to work for a company. After working a few days, he reports that he bumped his ear against a scaffold or got lime in his ear or some such injury, causing it to discharge and impair his hearing.

The second type is the man who receives a head injury and later states it has runined the hearing in one ear. In these cases, there may or may not be a skull fracture present.

The third type is that of the laborer who sees some of his fellow workmen getting large awards for actual impairment of hearing, acquired while shutting off wild wells. His palm begins to itch, and he is then ripe for a lawyer to see. These men may have a small amount of impairment at first and later clear up entirely, or may still have a residue of impairment and try to exaggerate their claims.

To take the first case, examination shows either a foul smelling discharge from old cholesteatoma, or a mucopurulent discharge from a eustachian tube, discharging upward into the middle ear. The perforation will have round, annealed edges, rather than thin sharp irregular or eliptical edges and often times, granulation tissue or polypi will be present. Often the bones will be eroded or the drum absent and this takes years to occur. An X-ray will show a hard eburnated mastoid to compare with the normal side, since these are old unoperated mastoiditis cases. Usually if the hearing is impaired, there is a self evident reason present to account for the impairment.

These cases should have careful hearing and fistula tests and caloric douches

to ascertain how much of the inner ear is affected, as well as the middle ear. An estimate should then be made of the amount of destruction present, the length of time it has been present, whether it should be treated or operated, whether it could be due to the accident complained of, and whether it can be repaired by any means.

The second type may have had loss of consciousness, skull fracture, and brain contusion or oedema. It is pretty well established that it is next to impossible to produce by injury, a central deafness more central than the geniculate body. Since each ear has bilateral central representation, it takes a lesion in the anterior end of both temporal lobes close to the transverse fissure, to produce complete central deafness in one or both ears. Dandy has completely expirated the left temporal lobe in a patient and the complete right hemisphere in another without demonstrable defects or hearing. I believe hearing impairment from oedema or contusion of the brain practically never occurs. If the fracture extends through the petrous portion breaking the nerve, then of course complete loss of hearing and vestibular function of the peripheral type occurs. Complete loss of hearing accompanied by violent dizziness, nausea, palor and sweating, and paralysis of the accompanying 7th nerve makes the diagnosis simple.

Theoretically the fracture may extend obliquely across the vestibule or canals and the cochlea escape, or the cochlea may be affected and the vestibule escape. This is more theoretical, however, than actual, because the accompanying hemorrhage, oedema, serious exudation, infection, or loss of endolymph from such an injury would sooner or later affect the remaining unfractured part. My experience has been that either there is complete loss of both hearing and vestibular function or else both escape, except for the possible conductive impairment produced by rupture of the drum or blood in the middle ear.

The third type, or the malingerer who may have had some slight impairment from the noise of a wild well and who comes in later for increased awards, is the hard case.

The noise and reverberation produced by a hundred million foot gasser running wild, cannot be compared to anything less than a continued clap of thunder in the ears. There is both a mechanical defect due to the impact of the sound wave against the drum, and excessive stimulation of the hair cells that tires them out much the same as excessively bright light uses up the visual purple of the retina. The noise to which an aviator in a closed cockpit behind a 400 horsepower engine, or a boiler maker inside a boiler with an air hammer going, is very small compared to that to which these men are exposed.

The noise of a single large impact as that to which gunners are exposed is a different kind of injury. This last is actual trauma to the middle or inner ear, comparable to a blow against the ear, while the wild well produces over stimulation, more than actual trauma.

These men wear all types of devices in the ear canals to break the impact of the loud noise and have more or less success with them. The ones who receive the worse defects are those working in the cellar where the closed walls evidently intensify the impact. Those having closed eustachian tubes usually get a larger injury to that ear because of the slowness with which the middle ear accommodates itself to this great outside pressure on the drum.

These men usually have large impairments to start off with. This will last about a week, then the hearing begins to improve and continues to do so for about four or six weeks at which time the maximum recovery is reached.

When first examined they show impairment of the nerve type, in that bone conduction is markedly reduced and in some it is almost impossible to stimulate the nerve by bone conduction. The vestibular apparatus is affected but little and cold caloric douches will produce good and equal nystagmus of proper direction, time and quality and equally good nausea, sweat and vomiting with proper post-pointing and falling.

A few gentle inflations to pull the staples out of the oval window, and time, usually produce best recovery in about six weeks from the time of the accident.

If the impairment is small as is usually the case in laborers not working in the cellar, these ears will become normal again. If, however, the impairment is large, there may be degeneration of the entire 8th nerve with impairment of the vestibule as well as the cochlea, and this is generally bilateral.

When a malingerer appears with a complaint of impaired hearing in one ear it is as a rule very easy to catch him. There are four or five tests, one of which will usually be successful. The one most commonly used is to place, with the patient's eyes closed, the stethescope in his ears and then talk into the bell, pinching first one tube and then the other, so that he hears first in one ear then the other. If he can carry on a conversation, he must theoretically hear some of the words with each ear. This, however, is not fair to the patient unless the conversation is carried on in a whisper, because he can hear ordinary conversation in his good ear even with the canal to that ear closed.

Another test which is conclusive when it works: This is to place a Barany noise apparatus that is sounding, alternately first in one ear, then in the other and talk to him while this is being carried out. One must be careful at first to ask questions when the noise apparatus is not running, then after one or two exchanges, ask him another question while the noise apparatus is running in his admittedly good ear. For instance, I place this apparatus in his good ear and let it run a second and then take it out and say, "you hear it well in this ear?" then place it in the questionable ear and after it runs a second take it out and say, "not so good in this ear?" then I place it back in his good ear and while it is running in this ear say, "but you hear it plainly in this ear?" If he answers the question, he can hear ordinary conversation at close range with the questionable ear and cannot have more than 50 percent impairment in it. I have yet to see a malingerer who would not answer the third question and of course the Barany noise apparatus running in the good ear completely excludes it from hearing.

Another test where he admits hearing conversation at close range is to have him place a stopper tightly in his good ear and after making a few tests start a sentence and walk across to the other side of the room and open a door or close a window while talking. You can by this means get fairly accurate information as to whether he heard all of the sentence or only the part spoken close to him.

Another test is after closing his eyes, have him place a stopper tightly in his bad ear and at 20 feet distance repeat words or figures in a low tone, which he will of course be able to repeat. Then have him exchange the stopper to his good ear, he will then of course not repeat the test words given him. Now, as though you were satisfied that he cannot hear, you say in the same tone of voice "alright that will do—change the stopper to the other ear." If he is malingering he will in most cases, carry out the command which proves that he hears low conversational tones at 20 feet which is normal Often times other commands such as "turn your head to the left" or "open your eyes" may be carried out corroborating the first observation. Occasionally he will begin to carry out a command, then catch him self and stop the movement.

If the injury be such as might produce a nerve impairment, then I have worked out another test which is conclusive. It is accurate because the patient gives his answers in terms of hearing with his good ear, with which he is not trying to mislead the examiner.

Take an ordinary ausculation tube and mark off in the center of it two lines about two inches apart, then the remaining distance to each ear clip, mark off in four equal divisions with white chalk. Have him close both eyes and insert the clips in his ears. Now if a vibrating tuning fork handle be placed against the middle section of this tube, a normal person will hear it in both ears, but if the fork be moved toward either ear more than an inch, it will become so loud in the nearer ear that he will not hear it at all in the other. Then all you have to ask him is to tell you when he does not hear the fork in his admittedly good ear. The fork is then started vibrating and placed in the center section and he will hear it in both ears, but admits he hears it only in his good ear. His eyes are closed. Then the fork is moved toward the bad ear and he is told to say when he ceases to hear it in his good ear. He of course does not know how you have moved the fork. As it moves more than one inch toward the bad ear the hum ceases entirely in his good ear and he will say he can no longer hear it in his good ear, This proves the bad ear is good enough to completely overpower his admittedly good ear. If there be a nerve defect of some degree in the bad ear, then the tuning fork must be moved nearer and nearer toward the defective ear before it will overpower the unaffected ear. If the fork must be moved half of the distance between the middle of the tube and the ear before the sound ceases in his good ear, then he has about a 50 percent nerve

deafness in the bad ear. The hearing by this test is entirely by bone conduction.

Of course if the patient is not a malingerer, then it is very easy to tell by tuning forks or audiometer, whisper, watch, acumeter and Galton Whistle, the exact nature of the lesion, amount of impairment, type, etc.

In my opinion an audiometer gives no information that cannot be obtained by tuning forks. I do no believe any machine can take the place of accurate observation and thinking, any more than a machine can be made that will take out an appendix. The audiometer testing is entirely subjective and therefore, liable to error if the patient is malingering.

—— ——o——

PAINLESS JAUNDICE: ITS DIFFERENTIAL DIAGNOSIS BY GALACTOSE TOLERANCE TEST

According to Harry Shay and Eugene Schloss, Philadelphia (Journal A. M. A., April 23, 1932), the galactose tolerance test is a simple, ready means of identifying a clinically difficult group of cases, namely, the toxic or infectious jaundice group, and of separating it from the obstructive type which frequently masquerades in identical symptomatology. Particularly is the latter true in the cases seen in middle and in later life, when the consideration of malignancy is always looming in the foreground. The value of the test is further enhanced by the simplicity of the technic involved. After an overnight fast, the patient is given exactly 40 Gm. of galactose. This is usually administered in two glasses of water (approximately 500 cc.) and may be flavored with a few drops of lemon juice. During the five-hour period of the test, the patient may drink as much water as desired in order to insure full elimination of any nonutilized sugar, but is permitted to ingest absolutely nothing else. Specimens of urine are collected at hourly intervals for five hours, care being exercised to secure the total amount of urine voided during the entire test period. When the test is completed, the total quantity of urine is measured and mixed; estimation of the amount of sugar present is determined according to the Benedict quantitative method, and the total amount of sugar excreted during the period of the test is calculated. In diabetic patients a special technic is employed to separate the dextrose from any galactose excreted. A normal individual may excrete from 0 to 3 Gm. of galactose after the ingestion of 40 Gm. of that sugar. However, when the liver cells are acutely and diffusely damaged, as in a toxic or infectious process, the carbohydrate function of the liver is impaired, and, as a result, amounts of galactose greater than 3 Gm. are excreted in the urine in the five hours following the ingestion of 40 Gm. of that sugar. Since this type of liver cell damage is frequently accompanied by jaundice this test finds its greatest usefulness in differentiating the toxic or infectious jaundice from the obstructive and hemolytic types.

PERFORATION OF THE NASAL SEPTUM*

HOWARD S. BROWNE, M.D.
PONCA CITY

In reporting a case of traumatic perforation of the nasal septum, I wish to review briefly a few of the more common causes of this trouble which we as nose and throat specialists see quite commonly, and as a rule do little to relieve.

ETIOLOGY

Ballenger[1] states that the causes of perforation of the septum may be divided into: (a) congenital; (b) chronic granuloma; (c) traumatic; (d) acute infection; (e) atrophic or perforating ulcer. The first cause is extremely rare, a few cases having been reported by Zukerkandl. Under the second cause may be listed syphilis, tubercle and lupus. Traumatic perforations may be due to surgical procedures, accidental violence and picking the nose with the finger nail, and may be found in either the cartilaginous or bony portion.

Perforations may follow acute infectious diseases as diphtheria, scarlet fever, typhoid fever and phlegmonous abscess. Atrophic perforations is probably the most common type. An anterior spur or deviation is usually present and as it projects into the current of inspired air it is subject to the constant mechanical irritation of dust and the dried secretion which accumulate upon it. The crusts formed are forcibly blown and picked off, the epithelium comes away, and nosebleed is quite common. A retrograde process continues until the entire thickness of the septum is destroyed. Infection is usually present and assists in the above condition.

SYMPTOMS

The symptoms of perforation vary with the size, cause and location of the hole. Those involving the bony portion are usually the result of a syphilitic necrosis and are accompanied by an offensive odor. Later we have a deformity sometimes resulting in a saddle back nose, and occasionally the entire soft portions of the nose, no longer supported by cartilage, fall and produce ugly deformities. There may be blocking of the nasal passages with crusts or scabs which accumulate upon the margins of the opening. These not only cause

*Read before the Section on Eye, Ear, Nose and Throat, Oklahoma State Medical Association, Tulsa, Oklahoma, May 25, 1932.

an obstruction to nasal respiration but produce a tickling sensation which prompts the patient to attempt to remove them. Repeated epistaxis should arouse suspicion of a perforating ulcer. An annoying symptom observed in some small perforations is respiratory whistling. This is seen in some small anterior perforations.

TREATMENT

Hays[2] states that if they cause no symptoms perforations are better left alone. At the best they are hard to relieve. Whistling sounds may be relieved by enlarging the perforation anteriorily. Dr. Goldestein has suggested and successfully used a plastic flap of mucus membrane which is dissected, turned into the opening, inserted and sutured between the elevated membranes of the two sides of the septum. Syphilis should of course be treated by the administration of the usual remedies for this disease. Retrograde changes, scabs and crusts may be relieved by cleansing, antiseptic washes and ointments. The denuded areas may be painted with 4 per cent silver nitrate. Ichthyol in 25 percent solution has been recommended.

REPORT OF A CASE

A young man 24 years of age came into my office upon the request of his wife and stated that he was having difficulty in getting air through his nose. He complained of some slight pain at times, and scabs and crusts forming in his nose. The chief complaint was from his wife who noticed an odor which was annoying to her. Examination disclosed the anterior nares low down on each side almost completely blocked by a dirty, foul smelling crust which appeared to be in about the same position on each side of the cartilaginous portion.

I grasped one side of the mass with a nasal forceps and much to my surprise the whole mass came away, even the portion on the opposite side, leaving a nice clean round hole in the cartilage of the septum. Upon cleansing the crusts and debris from the object removed it proved to be a piece of wood from the limb of a tree; this piece measured approximately one and a half inches by one fourth inch in thickness, and was hard and in a very good state of preservation.

The young man then remembered that about six years previously, while riding a horse chasing a cow through the woods near Claremore, Oklahoma, the horse run under the limb of a tree, and he was struck on the nose by the limb. He had a nose bleed that evening and some slight bleeding for a few days afterwards but never at any time had felt the need of consulting a physician about his condition until his wife brought him in to see me.

REFERENCES

1. Ballenger, Diseases of the Nose, Throat and Ear.

2. Hays, Diseases of the Ear, Nose and Throat.

INFANTILE TETANY*

W. M. TAYLOR, M.D.
OKLAHOMA CITY

Having recently had four cases on the newborn service in the O. B. department at St. Anthony's Hospital, and one case at six weeks of age, following operation for pyloric-stenosis, presenting a syndrome closely resembling tetany, it has seemed to me that this opportunity for close observation might offer something of more than passing interest in the study of a condition of which there has been recently, considerable discussion among the pediatrists, *namely*, tetany during first few days of life.

While infantile tetany has been defined as a condition in which there is a hyperexcitability of the nervous system to various stimuli, due to a disturbance of calcium metabolism, usually occurring between the fourth and twenty-fourth month of life, it seems that this complex may be clinically demonstrated in the newborn.

Murry Bass and Karelitz—Section Diseases of Children, A. M. A., 1931, "Tetany and Vomiting in First Days of Life," mention hyperpyrexia, vomiting and carpo-pedal spasm being present in all their cases reported and suggests that these might properly be included under the clinical name of tetany. Ray Shannon in 1929 and 1931, refers to tetany syndrome in which he mentions tetany with generalized edema and cerebral compression in the newborn, and remarks on the promptness with which his cases cleared up under the calcium chloride and parathyroid extract therapy, as did Bass' cases following the administration of calcium gluconate intravenously. His (Shannon) suggestion that there is also a cerebral edema giving rise to some of the nervous manifestations seems very plausible and is to me a point well worth bearing in mind as we have all seen cases in which we felt justified in making a diagnosis of meningeal hemorrhage and to our surprise find the child recovers with no evidence of spastic paralysis as an aftermath, as noted in cases No. 3 and 4 of this report.

Case No. 1. L. L. T., white male born St. Anthony's Hospital, January 12, 1926, was seen by me through courtesy of Dr. E. P. Allen. Low forcep delivery. Fourth day general convulsive seizures, no edema. Convulsions prolonged and repeated. Dyspnea marked. Carpo-pedal spasms.

*Read before State Pediatric Society, Tulsa, Oklahoma, May, 1932.

Laryngospasm, no fever, no edema noted. Treatment: chloral and bromides as sedative. Symptoms subsiding within ten days. This child is now living at sixth year, is normal mentally, though of the hypertonic type. Normal physically.

Case No. 2.—G. Allen T. White male born St. Anthony's Hospital, June 17, 1930, four years later, and the brother of case No. 1. Normal delivery. Convulsions second day, repeated to the number of six. No fever, no edema. Relieved by chloral and bromides. Left hospital on seventh day. Following history to the effect he is normal in every way, no evidence of spasmophilia at present age of two and one-half years.

Regarding a possible etiological factor in these two cases one may consider the condition and diet of the mother. She never ate vegetables while carrying the first baby (Case No. 1), had persistent vomiting for six months to such a degree she was taken to the hospital with suggestion it might be necessary to interrupt pregnancy. During second pregnancy had less nausea. What supervision of her diet had to do with it is not definite, only suggestive of the influence of metabolic disturbances of the mother on the infant.

Case No. 3—D. J. J. Girl, born October 11, 1931, at St. Anthony's Hospital was seen at request of Dr. J. F. Kuhn. Low forcep delivery, full term. Breathed without effort at resuscitation. Cried great deal first twenty-four hours. Second twenty-four hours became hypertonic, cyanotic at frequent intervals and with a generalized edema. To rule out birth injury, lumbar puncture was done and examination of fluid yielded no evidence of hemorrhage or irritative lesion of meninges. Nervous symptoms; general muscular spasms, carpo-pedal spasm and cried as if in pain. Schvostek's sign present to the degree that the entire head would respond with the spasm of facial muscles. Jarring crib sufficient to bring on contraction of arms and legs from which there was no complete relaxation. Cerebral symptoms; cyanosis was present with each seizure. There was vomiting of projectile type.

Treatment: Parathyroid extract Collip, ½ c.c. intramuscularly and repeated in twenty-four hours. Calcium chloride grains 2½ every four hours as soon as vomiting ceased and was continued while in hospital. Nothing being retained by mouth normal saline was given intraperitoneally, 150 c.c. every twelve hours, three injections. Convulsions ceased after twenty-four hours, at which time the edema was much less. Third day formula was taken from bottle and retained. Baby discharged end of second week, taking breast and complemental feedings. General condition fairly good. This baby at seven months, weighed sixteen pounds, physically normal and no evidence of any neurological disturbances present.

Case No. 4—G. H. K. White male, seen by courtesy of Dr. Dick Lowry, February 26, 1932. Two weeks premature, delivery by cesarian section. Mother suffering from fulmunating type of eclampsia. Baby was pink on delivery but later became cyanotic and was resuscitated with difficulty. Given one ampule of metrozol and 1-1000 grain of atropin. Artificial respiration and oxygen. Jar of crib would bring on contraction of arms and legs. Baby was hypertonic and became spastic on handling. Facial nerve and neck reflex being very positive. Same day at 6:00 P. M., became very cyanotic and seemed in extremis but responded to adrenalin, caffeine and oxygen after prolonged effort. Vomiting persistent and projectile. Baby became very edematous over face and neck within twenty-four hours, eyes closed. Intracranial injury was obviously not to be considered, the infant having been delivered by cesarian section and no lumbar puncture was done.

Treatment. Parathormone ½ c.c. repeated in twelve hours. Edema gradually disappeared. Convulsions and vomiting ceased and lactic acid formula was taken. Left hospital at end of seven days. Calcium chloride grains 2½ three times daily. This baby now at three months, is gaining and shows no ill effects from the illness other than congenital cataract. The association of congenital cataract and tetany has been referred to by oculists.

Case No. 5—This case was reported by me in Oklahoma State Journal, May, 1931, and is not strictly of the newborn period though perhaps the etiology is the same. On the sixth week following vomiting from pyloric stenosis and operation for relief of same, my conclusion was that the attack of tetany was produced by an alkalosis. This promptly subsided following sedative treatment and calcium given by mouth.

Shannon mentions perticularly the association of generalized edema and symptoms of cerebral compression which were present in two of his cases. Bass and Karelitz noted specially the association of vomiting, hyperpyrexia and abdominal distention. The hyperpyrexia was not noted in my cases. Shannon reported one case of death from cerebral compression which came to autopsy. In Kehrer's cases edema was a prominent symptom and responded to calcium therapy. While it is true the calcium content of the blood serum was not determined in these cases it has been claimed on rather substantial evidence that the estimate should be a qualitative one rather than quantitative one.

Cases 1 and 2 reported were infants of same mother and with the exception of showing no edema had corresponding clinical manifestations of cases 3 and 4 which briefly were:

1. Schvostek's facial nerve reflex.
2. Carpo-pedal spasm.
3. Generalized board like edema over body and closure of eyes.
4. Persistent vomiting.
5. Normal temperature.

Cases 3 and 4 responded promptly to the administration of parathyroid extract

and calcium therapy, as was suggested by Shannon. It seems plausible that we were here dealing with a calcium metabolism disturbance which produces the tetany syndrome and that by supplying calcium in some available form the condition is corrected, though of calcium metabolism and calcium therapy, even today much of our knowledge as to calcium is imperfect and incomplete, even in the minds of those whose researches have qualified them to speak with authority. It seems interesting to note that the mother of cases 1 and 2 was ill and lost much weight from nausea and vomiting for the first six months of pregnancy. The mother of case 4 was delivered during an eclamptic seizure. Or to summarize, have reported four cases manifesting the tetany syndrome, two of which were treated only by sedatives and liberal amounts of fluids (normal saline subcutaneously and intraperitoneally) no calcium being given, both recovered but more slowly than with calcium therapy. Two cases in which parathyroid extract and calcium chloride were employed recovered immediately. It seems possible that many cases of suspected birth injury in which complete and unexpected recovery followed, may fall in this group of cases.

1. Bass and Karelitz—Tetany Accompanied by Hyperpyrexia and Vomiting in First Days of Life. Jr. A. M. A., Nov. 7, 1931.

2. Shannon, W. R.—Generalized Edema in Association with Tetany of the New-Born. Sept., 1929. P. 549. Archives of Pediatrics.

3. Shannon, W. R.—Tetany, Generalized Edema and Cerebral Compression in the New-Born. Archives of Pediatrics, March, 1931. P. 153.

4. Kehrer—As quoted by Shannon.

5. Taylor, W. M.—Gastric Tetany. Oklahoma State Medical Journal, May, 1931.

ACUTE APLASTIC ANEMIA COMPLICATING ARSPHENAMINE THERAPY: REPORT OF CASE TREATED FOR SYPHILIS COINCIDENT WITH TUBERCULOSIS

I. D. Bronfin and Isidor Singerman, Denver (Journal A. M. A., May 14, 1932), report that in a case of acute arsenical aplastic anemia, terminating fatally in twenty-two days, treatment was primarily for pulmonary tuberculosis, but a syphilitic infection apparently retarded recovery. The history of a cutaneous rash during a previous course of arsphenamine treatments gave the patient and the authors a sense of false security. The inescapable conclusion is that a patient under arsphenamine medication should have frequent examinations, even in the absence of any untoward manifestations, and the drug should be immediately discontinued as soon as such symptoms as malaise, pallor, itching of the skin and purpuric manifestations are noted.

EYE GROUNDS IN EVERYDAY PRACTICE*

A. C. McFARLING, M.D.
SHAWNEE

In the year 1851, there was born a child, who was in later year destined to become the world's most widely known and quoted authority on ophthalmology — Ernest Fuchs.

It was in this same year, we are told, that Helmholtz was one day handling a small mirror, when, quite by accident a ray of sunlight was projected across the street, through a window, into a room in which a number of persons were engaged in some such domestic occupation as sewing. By slight manipulation of the mirror, he found that all parts of the room could be seen in fairly accurate detail. Aware of the fact that he had been unable to see into the room without the aid of the mirror, and sensing the potential application of the principle thus revealed as an aid in studying the interior of the eye, the inventive genius of this great mind was intrigued into a series of experiments, which resulted in the production of the ophthalmoscope.

In four score years which have elapsed since the advent of ophthalmoscopy a great deal of information has been gathered and volumes have been written upon the retinal changes which are peculiar to diseases of the eye, as well as those retinal changes whose proper interpretation may lead the clinician to diagnostic safety, in certain cases otherwise shrouded in obscurity.

It is not the purpose of this paper to recount the many things which although of vital interest, are matters of routine and are therefore common knowledge to every ophthalmologist. But in the hope of provoking a liberal discussion of the subject, whereby may be discovered some observations of interest which are possibly not as yet of common knowledge, I shall invite your attention to a brief consideration of certain fundus changes observed in the following obscure cases which were later proven to be neurosyphilis.

Case No. 1. Male, age 35, came seeking a pair of glasses for the cure of a headache, which had troubled him for several weeks and which persisted in spite of all previous medical treatment. Dynamic refraction of the eyes revealed however that glasses were not indicated, since the vision,

*Read before Annual Session Oklahoma State Medical Association, Tulsa, May 24-26, 1932.

monocular and binocular, was normal. There was no muscular insufficiency or imbalance. Pupillar reaction to light, sluggish, concensual reaction normal. Ophthalmoscopic examination revealed a noticeable thickening of nasal half of optic disc, which was bilateral. Fundus otherwise normal in appearance, media clear and tension normal. Blood Wassermann negative. Lumbar puncture yielded a spinal fluid, which was clear, with slightly increased tension. Wassermann decidedly positive.

Case No. 2. Male, age about 40. Industrial worker met with an accident while on duty in which, in addition to various contusions of the soft parts, he sustained a wrenched back. X-ray showed no broken bones, but the man was unable to work and was put to bed. After some weeks of invalidism, during which he was under competent medical attention, he was still unable to return to work on account of the pain and soreness in the back. Although he did not appear to be a very sick man, there was no evidence of malingering and a consultation was called, and in the course of examination which followed, ophthalmoscopic study of the fundus revealed a thickening of the nasal half of the optic disc of each eye, and there was also observed impairment of the pupillary reaction to light. Spinal puncture was advised and following results observed. Spinal fluid clear; tension slightly increased; Wassermann positive; blood Wassermann was negative.

Recommendations for lumbar puncture in each of the foregoing cases were predicated upon changes in the fundus, *namely*, thickening of the nasal half of optic disc. This condition may be satisfactorily accounted for in like manner as the changes which are responsible for papiloedema or choked disc, with the difference that in the above mentioned cases the histological changes are much milder in degree.

This very mild degree of oedema may, however, lead to some confusion because of the fact that the nasal half of the normal disc is of unsharp outline. It will be remembered at this point, however, that of all the fibers from the nerve head to reach the macular region, that only about thirty percent of them emerge from the temporal side of the disc to pass directly to the macula. While the remaining seventy percent emerge from the nasal side of the disc and must therefore bend upon themselves in order to reach the macular region. This anatomical arrangement of the fibers not only accounts for the unsharp outline of the edge of the normal disc on the nasal side, but renders slight degrees of oedema noticeable on the nasal side long before the appearance of that degree of swelling classically known as "choked disc."

Whether or not this fundus change can be demonstrated in all cases of neurosyphilis, the writer does not undertake to say, however, he has observed it in a number of additional cases, but after carefully searching the literature no reference could be found touching upon this particular point.

In closing, we should be mindful of the fact that when intracranial tension is pathologically increased to the point of producing choked disc, the diagnosis will have been, in many cases, already deduceable from the clinical symptoms. It therefore behooves us as ophthalmologists to point the way to an earlier diagnosis when possible.

———o———

SUICIDE: POSSIBILITIES OF PREVENTION BY EARLY RECOGNITION OF SOME DANGER SIGNALS

Ruth E. Fairbank, Baltimore (Journal A. M. A., May 14, 1932), states that the only possible cure of suicide is prevention. She enumerates some of the guide-posts one can use in this connection thus: 1. Most suicides occur in patients who are depressed but suicide is also relatively frequent in schizophrenic and paranoid patients, especially those whose conversation reveals depression. 2. Disappointment over some situation which seems unmodifiable to the rigid individual is perhaps the most common motive in suicide. A common feature in cases studied by the author is the talk of hopelessness, of wanting to die, of a fear of "going crazy"; such expressions as "a feeling of emptiness," of "guilt," or the special preoccupation with various delusions of persecution and with autistic fantasy. 3. The "rigid personality" is present in about one-third of the cases and shows the need of careful watching. 4. A family history of suicide is apt to reduce the resistance. 5. Methods show the things from which patients need to be protected. In the hospital the impulsive plungers are especially difficult to take care of. On the outside, suicides from gas, gun-shot wounds and drowning are frequent. 6. Warnings are to be found in previous attempts and the frequent talk of suicide. Some patients, however, give no warning; others apparently try to protect themselves, while a third group conceal the means of suicide. 7. Special problems involve such questions as when to put a patient on suicidal observation and when to take him off, and how much risk to take in order to encourage an interest in occupation or to avoid unnecessary chafing against restrictions. The methods to be adopted must in the end rest with the personnel in charge, depending to a large extent on the rapport with the patient and the willingness of the family to share the responsibility which such a risk involves. 8. Finally, regarding prevention, the author suggests the restriction of the loose handling of firearms, poisons and sedatives, if possible, and urges the cultivation of a sensitiveness to the aforementioned symptoms, warnings and mistakes. It is necessary to realize that a suicidal patient must never be left alone.

SOME ASPECTS IN THE ETIOLOGY AND TREATMENT OF ACUTE AND CHRONIC GLAUCOMA

E. J. CURRAN, M.D.
(Harvard) D. Ophth. (Oxon.)
From the Department of Ophthalmology, Medical School, University of Kansas.

Glaucoma may be a physical, mechanical, vascular, biological, or chemical problem, or a combination of some or all of these.

It may be a general disease or a local disease but when we are face to face with it, it is a mechanical problem and must be met by mechanical means. It is a problem of relief of pressure, and this relief has been given only by local drugs—which act mechanically, and operative treatment which also acts mechanically.

In some instances it may have been assisted by general treatment, but I have never yet seen a case of glaucoma cured by general treatment. We should therefore become well acquainted with all the mechanical means at our disposal for the relief of this condition. Quoting from my first paper on iridotomy in 1920* the mechanical means may be summarized as follows:

1. *Iridectomy.* Theories as to how it helps.
   (a) Drainage through the canal of Schlemm by exposing a large area by iridectomy well out to the attachment of the iris, or
   (b) On the theory that the cut edge of the iris allows the aqueous to filter into it and thereby comes into closer contact with the capillaries and may be taken up by the blood stream and thus help the damaged or inefficient filtering angle.

In the attempt to explain the undoubted benefit which iridectomy, without a filtering scar sometimes gives, these two principles are the only important ones advanced up to the present time. I shall endeavor to prove later that they are not the chief ways in which iridectomy without a filtering scar, gives relief.

*Archives of Ophthalmology, Vol. xlix., No. 2, 1920.

2. *Filtration and Fistulization.*

The failure of many iridectomies led some surgeons to seek purposely drainage through the sclera into the sub-conjunctival spaces, either (1) through iridectomy with filtering scar; (2) sclerotomy; or (3) both combined, or (4) with seton, by (5) sclerectomy alone or combined with iridectomy, buttonhole or complete, and (6) by including the iris in the wound (iridotasis and irido-cleisis). It is unnecessary to enumerate the various operations which have the principle of drainage through the sclera in view.

Drainage into the subchoroidal spaces posteriorly by puncture of the sclera in the ciliary region, and freeing the ciliary body with a spatula to connect the anterior chamber with the subchoroidal space or any other form cyclodialyses to serve the same purpose. These operations relieve the intraocular pressure in many cases. They are designed to increase the output of fluid and thus keep the pressure down. In 1924 I published a method by operation, which had for its principle the lessening of the inflow of fluid by subconjunctival cautery over the ciliary body. It gives permanent results in about 35% of cases tried. It has been used only in absolute glaucoma with pain to save the eye ball.

It is unnecessary for one to point out that all of these procedures are attended with grave dangers, nor are they, even when successfully performed the proper ones to select in all cases. No one is justified in taking a greater risk when a lesser one may be successful, especially if the lesser one will not add to the danger of relieving the pressure by a more radical operation later in case of failure. The operation of iridotomy is this lesser risk.

The experiments which I have been carrying on for 15 years differ from all others in the fact that there is an attempt to drain from the posterior into the anterior chamber. It is not only a difference in procedure, but a difference in principle, and therefore, if successful, in a small percentage of cases on account of its cosmetic results and its simplicity, it is a distinct addition to our treatment of some types of chronic and acute glaucoma.

(Archives of Ophthalmology, Vol. liv., No. 4, 1925).

Normally the aqueous passes through the pupil from the posterior to the anterior chamber but it is here contended that in some types of glaucoma this passage is impeded on account of the iris clinging closely to the lens over too great a surface extent. Some of the aqueous gets through with difficulty while some passes back forcing the lens and the iris still more

forward. This also happens in some cases of intumescent cataracts with glaucoma which, when a hole is made in the periphery of the iris fall back, at the same time there is a fall of intraocular pressure. If we carefully observe the lens through an ordinary iridectomy or the peripheral iridectomy in a sclerectomy operation we find the iris hugging the lens to almost the extreme periphery. This observation must be made when the anterior chamber fills and has remained normal for several weeks as the lens always comes forward immediately after the operation and remains so for some days or even weeks. It will be seen that at this time the filtering bleb becomes more circumscribed and more localized, so that at times it would be impossible to demonstrate that there was much if any filtration from the bleb to the rest of the subconjunctival tissue and it partakes of the nature of a small staphyloma, no doubt capable of distending during temporary increase of intraocular pressure. If an examination of the contour of the iris is made in some types of unoperated glaucoma one cannot fail to see that the bulging of the iris corresponds with the anterior surface of the lens, and this too, can be followed far out towards the periphery, excepting in some eyes in which the cornea is very small, and in these it takes but little to impede the flow of the aqueous through the pupil as in the eyes of negroes. At times the movement of the iris to light can be seen to be impeded by the lens, and the amount of surface extent hugging the lens can be determined. The movement of the iris and its apparent bulging should be observed carefully and compared with that of normal eyes. In the study of this phase iridectomies done as a preliminary to cataract operations furnish much instruction. In these, too, some weeks should elapse after the iridectomy before we can get accurate data because the anterior chamber should, as in the cases above mentioned, become normal, or nearly so in depth. It will be observed that in these eyes of normal intraocular pressure, the pillars of the coloboma do not rest on the lens, and but barely touch it only near the pupillary border. Of course, we are not now considering intumescent cataracts. The iris in these cases lie on the lens closely adapted over a greater surface extent than in certain types of senile cataracts, and this is why we have a tendency to glaucoma in such cases. All these observations are made on living eyes much better than in pathological specimens, which are always altered in preparation either by shrinkage of the tissues or displacement of the structures, and can be verified from the practice of most ophthalmic surgeons. With these considerations in view it appears to me that a better communication between the anterior and posterior chamber would help, in selected cases of glaucoma.

In September of 1916, I had what I took to be a suitable case for giving a better communication from the posterior to the anterior chamber. It was one of acute attack in chronic glaucoma. This iris and the lens were almost filling the anterior chamber and much of the periphery was apparently, though not, adherent to the back of the cornea. I made an incision of the cornea and iris together at the periphery with a cataract knife, taking care not to injure the lens, with the result of a permanent fall of intraocular pressure, which has persisted ever since, and the patient has 20-30 vision which would probably be 20-20 but for some corneal nebulae. There were some adhesions of the iris at the pupillary border which I could not demonstrate all around the pupil. There was no iris bombe. The other eye had been operated on by iridectomy some years previously with equal success by another surgeon. In this eye there was no filtering scar, and the iridectomy, of course, gave drainage into the anterior chamber as well as any other good effects it may have had.

Following this I did six selected cases each of which had one eye very far advanced and the other with between 20-30 and 20-20 vision. In the very advanced eye I sought to obtain drainage by complete iridectomy, avoiding filtering scar, always leaving an area in which I could do a sclerectomy should this fail, without the objectionable feature of having to dissect through the sclerotomy scar to split the cornea. In the better eye I made a five or six-millimeter incision on the scleral side of the cornea-scleral junction, and inserted the iris forceps, or hook, drew out the periphery of the iris and cut a small piece off, making a small peripheral iridectomy which always appeared triangular in shape when replaced. All except two of the complete iridectomies were perfectly successful in reducing intraocular pressure to normal. These two reduced it to such extent as to bring vision up, in one case from 20-100 to 20-50, and in the other from hand movements to 20-200. The hand movements were

past the fixation point on the temporal field; the peripheral iridectomy in the six cases reduced the intraocular pressure to normal without exception, and the anterior chamber always became, and remained, deeper than in the complete iridectomies. The last of these was done in October, 1918, and the intraocular pressure has remained normal, and the vision and field undiminished to this time, and there seems no likelihood of a change. It is easy to replace the iris in peripheral iridectomies, and they heal without a filtering scar.

These operations of peripheral iridectomy were an improvement on any I have known except the development to be described in this paper, which I consider the simplest and safest of all operations for some types of early chronic glaucoma including acute attacks and for some later stages of this disease. It is especially good in acute attacks at any stage.

At first the experiments were done in all kinds of acute and chronic glaucoma not selected on account of a shallow anterior chamber with bulging iris. It soon became apparent that we must select our cases and classify them in order to learn which patient is likely to be benefited by the operation because many of them were not helped and many helped only for a short time. Since the success seemed to depend on the type of the eye it appeared bettter to classify on an anatomical basis that I mentioned in my paper of 1920*.

I observed that most cases fell into the following types which on account of their importance in selecting cases for iridotomy, I shall re-state a little more fully.

*Archives of Ophthalmology, Vol. xlix., No. 2, 1920.

TYPE I

The first type of glaucoma with which this paper is concerned is that which is often encountered in the negro race, in which we find the chief characteristics to be small cornea, moderately shallow anterior chamber, and thick iris which does not show much of the contour of the crystalline lens, on account of the small diameter of the cornea. This type is not entirely suitable for iridotomy except as a preliminary to later operation.

Comment. Here we have a lens of somewhat the usual size, which approaches closer to the ciliary body than in those with the larger cornea and reduces the size of the posterior chamber. The iris is thicker and firmer and lying on a broad area of the lens, causes a difficulty of flow through the pupil. It requires only slight pushing forward to dam up the filtering angle which is in itself, on account of the smaller diameter of the cornea, reduced in length by about 3 to 6 mm. or more, and reduced in angle on account of the plane of the iris being at a lesser angle with the cornea, which factors must be taken into account if there is an increase of intra-ocular fluid at any period. Such eyes usually increase very much in intraocular pressure before there is any great further shallowing of the anterior chamber. While the iris has greater body and is able to resist pushing forward, yet on account of its thickness it takes very little to obstruct flow into the anterior chamber through the pupil because of the smaller angle made by the iris and the cornea, and also very little moving forward to obstruct the filtering angle; and for the foregoing special qualities it should be put into a special anatomic class.

If we take into consideration its anatomic features it would impress itself on us as a class which takes but little to disturb the balance between the production of aqueous and the exit from the eye on account of these mechanical features. Among this class of cases we must expect to find some which will not be given complete relief by drainage into the anterior chamber even if there is not an increased production of fluid, and some which will return to high tension if anything should occur to produce an extra amount of aqueous. At best the margin of safety is small. Iridotomy gives relief for a month to a year or two but finally a more radical operation must be done.

TYPE II

In the second type of glaucoma we find a deep or a normal anterior chamber, and a normal or a large cornea. The iris is not usually thin. There may be a poor response to eserin, but not always in such cases.

Comment. Probably the chief mechanical cause here is not a lack of drainage through the pupil, but a congenital limitation of the entrance of the canal of Schlemm or even a small canal leaving an exit capable of dealing with a normal production of aqueous, but incapable of dealing with any increased production or later normal rise and fall. In these cases, even when far advanced, there is little decrease in the depth of the anterior chamber. The margin of safety here is small and sub-

choroidal or drainage through the sclera is indicated. Iridotomy gives very temporary relief suitable in preparation for a more radical operation.

TYPE III

In the third type of glaucoma, we find a small or normal cornea with a shallow anterior chamber, and an iris with small nodular enlargements or a network of iris tissue attached far out in the cornea from the limbus of a congenital nature (faulty development of iris and anterior chamber) which is thick and crowding the filtering angle even with the pupil contracted. The iris, however, does not bulge forward very much nor show the contour of the lens to any great extent. If there is any forward movement it is obscured by the peculiar formation of the iris at its attachment. Eserin in the earlier stages brings down the pressure very well, so that it would seem that the entrance of the canal of Schlemm is in good order, and its capacity to take up the fuild not impaired if the base of the iris could be thinned out as with a myotic, in order to open up the angle. One chief mechanical trouble here is the thick base of the iris with the small angle. Here the margin of safety is small and an iridotomy gives but temporary relief. In this type it is useful only as a preparation for a sclerectomy, etc.

TYPE IV

In the fourth type of glaucoma, we find a marked bulging forward of the iris with the contour of the lens well shown; a shallow anterior chamber usually with a thin iris. The majority of these cases are in blue or gray eyes. The cornea may vary in size.

Comment. In the earlier stages they react well to my myotics; but, later, owing to adhesions of the iris over the pectinate ligaments or to the back of the periphery of the cornea, or adhesions of the iris to the anterior capsule of the lens caused by the prolonged use of myotics they react but poorly or not at all to eserin.

When a good peripheral iridotomy is done in this type it is beautiful to see the anterior chamber deepen on the operating table, whether it is an early case without peripheral adhesions, or an older one. This is the most suitable type for peripheral iridotomy.

CONGESTIVE AND NON-CONGESTIVE GLAUCOMA

I have not attempted to differentiate between congestive and non-congestive glaucoma. It would appear that their relationship is purely anatomical. If there is a sudden rise of intraocular pressure there will be so-called congestive signs and symptoms. Intraocular pressure in every normal eye varies during the day, and on certain occasions which I need not mention. An eye well balanced in structure can take care of these variations in the production of intraocular fluid which regulates the pressure. In some eyes the increase of pressure may be so gradual that there may be no signs of congestion, even though the pressure reaches an extremely high point and blindness ensues. Again, a normal, or moderately high, intraocular pressure may go without congestive symptoms until it produces blindness on account of the weak structure of the lamina cribrosa, yet both of the above conditions are likely to produce congestive symptoms at any time if there is a sudden rise of pressure.

Nearly all of the so-called non-congestive glaucomata are of type I, II and III on account of their anatomical structure. Very rarely do we find a non-congestive one among type IV cases. The difference between congestive and non-congestive glaucoma is a difference in the structure of the eye, modified, of course, by the nervous stability of the patient. The eyes coming under type IV furnish nearly all the congestive and acute cases on account of their structure having certain features, such as the bulging iris closely adapted to the lens. After iridotomy the congestive symptoms disappear and, if the margin for safety in the rise and fall of the production of intraocular fluid is not great enough at the filtering angle, it may appear later as a non-congestive glaucoma. Thus, with an alternation in structure by operation, the congestive type is turned into the non-congestive type.

THE OPERATION

The patient should be under a myotic and the pupil, if possible, well contracted. One hour before the operation 3 grains of amytol is given by mouth, fiften minutes before the operation 2 drops of a 5% solution of cocaine is instilled for 3 or four times, and three minutes before 8 minums of a 1% solution of cocaine is injected well back under tenon's capsule.

If this is allowed to come too far forward there will be balooning of the conjunctiva up to the cornea-scleral junction and it makes the operation too difficult.

Having then applied the fixation forceps nearly at the place at which the counter puncture in the cornea is intended, if necessary. The knife is passed through at the cornea-scleral junction. The back of the knife should be toward the pupil with the cutting edge up. The iris is engaged by the point of the knife, 2 m.m. further on and 1½ m.m. from the periphery which on further pushing forms a little ruck in the iris, rendering the easy performance of a counter-puncture in the iris. The knife is pushed still farther with pressure directed upward, so as to cut through the iris transversal, making a hole about 1 m.m. in size. Sometimes it is necessary to make a counterpuncture in the cornea in order to sever the intervening piece of iris. At times it is found that the first puncture and counter puncture in the iris makes a hole sufficiently large and the knife is withdrawn without a counterpuncture in the cornea. In cases of long standing in which there might be an occlusion of the canal of Schlemm, the knife is directed toward the ligamenta pectinati of the opposite side so that some of these would be cut by the point of the knife with the hope that free drainage into the canal of Schlemm would thus take place. If possible there should be no aqueous lost.

The knife used is a Knapp knife without an obstructing shoulder at the end of the shaft or a Lang's synechia knife. The knife should be kept in full view while passing through the anterior chamber. In acute cases the patient should be warned that there may be a little pain as the knife enters the iris. In all except case VI McLean tonometer was used.

The following case report is a brief follow up of cases of type IV, most of which have been operated on from 10 to 15 years ago.

Case 1—Type IV. Male, 43, presents himself for examination on May 10th, 1920. Right eye painful; great chemosis of conjunctiva and steamy cornea; anterior chamber almost absent. Vision light perception.

He was instructed to remain in the office under treatment until I returned from the hospital in the afternoon. A few weeks later I learned that after approved treatment by another oculist an iridectomy was done, which was immediately followed by an intraocular hemorrhage and the eyeball was removed.

On December 15th, 1920, he again came to my office with the left eye in exactly the same condition. The pain began four days before. An iridotomy was done with scarcely any loss of aqueous. The cornea became clear and from about thirty different places in the iris blood appeared, which soon filled the anterior chamber. This disappeared in four days and he left the hospital two weeks afterwards with a vision of 20-20—four letters. The intraocular pressure was 25 mm. Field reduced to 15 degrees on nasal side. It has varied between 25 mm. and 31 mm. up till last seen on May 29th, 1931. The vision remained 20-20—4 till 1927, when lens changes began which reduced it gradually to 20-100 in 1927. The field of vision is apparently unchanged.

Case 2—Type IV. Male, 55 years. First seen on January 20th, 1920. Left eye completely blind from glaucoma for over four years. Vision failing in the left eye for past three years. At times worse than others. No pain and no rainbow colours about lights. Temporary dimness more frequent lately. Vision 20-20—3 letters. Intraocular pressure 69 reduced to 51 under myotics (¼ of 1% eserine four times a day for one week). Increasing eserine to six times a day caused no change. Eye very comfortable under myotics. Field below contracted to 5° from the fixation point as shown in plate. Iridotomy operation was done on February 5th, 1920, and the anterior chamber became deeper. The intraocular pressure remained from 31 to 35; the field and the vision unaltered, and the eye comfortable until September, 1930, when the patient went to another state. He was advised to use ¼ of 1% eserine once a week.

In February, 1931, he informed me by letter that his eye was still comfortable and that his oculist finds no difference in vision or field of vision.

Case 3—Type IV. Female, white. Under treatment for glaucoma in both eyes for two years; good response to eserine.

Vision: R. 20-40; L. 20-30.

Field of right eye contracted to 10° in the upper nasal segment quadrant, and to 30° in the temporal side. Field of left eye slightly contracted on the nasal side.

Intraocular pressure: R. 68 mm. of mercury; L. 67 mm. of mercury.

Cornea: 11 mm.

Iris: Blue, and well marking the contour of the lens.

Anterior chamber: Shallow in right eye and less so in left eye.

Pupils: Active when not under eserine, but left more active than right.

The eyes were doing well under ¼ of 1% eserine three times a day.

June 2nd, an acute attack in right eye. A small iridotomy was done. The eye was normal in appearance and the anterior chamber deepened in a remarkable manner two days afterwards, and no further treatment was given the eye. Previous to the operation cocaine instillation would produce an immediate rise of intraocular pressure with pain. Fifteen days afterwards the eye was put under homatropin for one day, with no rise of intraocular pressure. The patient is now using eserine in the left eye, but nothing in the right eye, which is considered well up to this time. On October 1st, 1919, the intraocular pressure was 37 mm. and on December 2nd, 1919, the pressure was 31 mm. The patient has been under homatropin several times since September with no rise of pressure.

On April 15th, 1931, the intraocular pressure

was 31 mm. No eserine was used since the operation. Field unchanged and vision 20-30.

Case 4. The patient came for an operation on the left eye, October 10, 1919. The anterior chamber was very shallow, the iris blue and definitely marking the contour of the lens. Pupil active. The cornea was 11 mm. The eye had been under my care for two years. There was a history of previous congestive attacks. The eye responded well to eserine, 0.25 percent three times a day, and under this treatment had been losing no vision in field or acuity. There was scarcely any cupping of the disk. The vision in this eye was 20-30 with correcting glasses. As it was October 15, 1918, at which time the intraocular pressure was 57 mm., November 15, 1919, a small iridotomy, 1 mm. in length, was done in the upper part of the iris. The anterior chamber began to deepen immediately, and was almost normal fifteen minutes after the operation. It was about normal next day. Since that time repeated observations of the pressure have been made and it has never been found to be above normal. On June 3rd, 1931, vision 20-30. Field unchanged.

Case 5—Type IV. J. S. B., a white man, aged 48, came to my office, September 13, 1919, complaining of troublesome halos around lights at night time and inability to read with vision, which he described as blurring on some days and quite good on others. There was never any pain. Five months before his case had been diagnosed as chronic glaucoma by another oculist. He was under eserine three times a day during the last five months, but still he would at times see the colour rings around the lights at night with the left eye. These were troublesome.

Cornea: 11.5 mm. Iris, blue, thin and bulging forward, making a shallow anterior chamber both eyes. Left pupil oval with the long axis vertical. Both pupils reacted fairly well to light and accommodation. The intraocular pressure felt normal to palpation. Vision: R. 20-20; L. 20-20. The patient was instructed to omit eserine for four days, and at the end of that time the introcular pressure was: R. 45; L. 86. The colour rings had returned after the first day without the drops. Resumed eserine.

December 13th: After two days without the eserine drops, the intraocular pressure was: R. 45 mm. of mercury; L. 70 mm. The patient was sent to the hospital and a 1 mm. iridotomy was done in the upper periphery of the iris. The eyeball was punctured 1 mm. from the clear edge of the cornea. The physicians present had been asked to observe the shallowness of the anterior chamber before the operation, which was done with practically no loss of aqueous. The changes in the eye were then observed for fifteen minutes after, while he was on the operating table. The chamber gradually deepened and became perfectly normal under observation, but the tension felt, at the end of fifteen minutes, as high as, or higher than before the puncture was made. The wound in the eyeball had evidently been completely closed in that time. Next day the eye felt soft normal, and had not been above 30 mm. of mercury at any time since the operation during the many tests. No treatment was given to this eye since the operation, and there has been no re-appearance of the colour rings up to November, 1929, when the intraocular pressure was 32. Fields unchanged. No local treatment during 10 years.

On January 7th, 1920, the right eye, which was under a myotic all this time, began to give trouble by frequent blurring and colour rings if the myotic was neglected even once. Intraocular pressure after three days without myotic 56. Field slightly contracted on nasal side. January 15th, iridotomy attempted but no hole in iris could be found. There was a return of the symptoms and again myotics were resorted to. At the end of 5 months these had to be increased to six times a day. On July 12th, 1920, a successful iridotomy was done with complete relief, which lasted till November 6th, 1929. A few days after this date the patient died of cardiac disease.

Case 6—Type IV. Female, aged 72. Seen on June 26th, 1919, at the request of another oculist. Past history not available. Right eye was very painful for five days. There was moderate chemosis of the conjunctiva, steamy cornea, anterior chamber shallow. The pupil was 3 mm. under eserine. The intraocular pressure (Schiotz) was 65 mm.

Vision: Hand movements.

Local anaesthesia failed and the patient was put under chloroform and a small peripheral iridotomy was performed. When seen three weeks later the eye was quiet and the vision was 10-100 without correction. There was no return of symptoms up to the time the patient died four years afterwards.

CONCLUSION

1. In many cases of chronic glaucoma including acute attacks the chief mechanical factor is lack of proper drainage from the posterior to the anterior chamber on account of the iris being too closely adapted to the lens over a great surface extent thus impeding the flow of aqueous through the pupil and allowing some to permeate the vitreous and help to push the lens and iris forward, making the anterior chamber shallow and partly occluding the filtering angle as a secondary effect. In such cases drainage into the anterior chamber through a peripheral iridotomy restores it and results in relief of pressure.

2. In glaucoma which has persisted for a long time the filtering angle may be permanently or partly occluded and incapable of full restoration. In such cases, in addition to drainage into the anterior chamber, it is necessary to subconjunctival or subchoroidal drainage.

3. Drainage into the anterior chamber may be accomplished by ordinary iridectomy with or without sclerectomy. It also accompanies iridotasis and iridocliesis, but is better accomplished with a small peripheral iridectomy and still better with a small peripheral iridotomy, as described in this paper.

4. A small peripheral iridotomy should be the operation of election in all cases of

chronic primary glauoma, including acute attacks in the course of the disease, on account of its safety from intraocular hemorrhages, and because of the fact that it puts the eye in better condition for a subconjunctival or subchoroidal drainage if found to be necessary afterward. It does not alter the appearance of the eye and the patient readily consents to an early operation.

5. If an eye which has been under very high intraocular pressure for a long period has been reduced by operation 20 or 30 mm. of mercury and still is 10 or 15 mm. above normal and has improved in vision and in field or remained the same, it is questionable whether it is justifiable to submit the patient to another operation in order to bring intraocular pressure to normal; for the nerve fibres which have withstood the higher intraocular pressure are capable of functioning indefinitely under the lower intraocular pressure. The eye should be under close observation.

6. The permanency of the results can be judged better by a perusal of the reported cases, in this paper, which were done from 10 to 15 years ago. Type IV gives the best results both in reduction of pressure and permanency. We still have to remember that even with the best results all glaucomatous eyes should be under constant and competent observation for the rest of the patient's life.

SPINAL ANESTHESIA

F. G. Lindemulder, Ann Arbor, Mich. (Journal A. M. A., July 16, 1932), describes the clinical changes that occur during and following spinal anesthesia and some of the sequelae and complications. He also reports two cases in which death occurred several days following the anesthesia. It appeared that the anesthesia was a contributing cause for the deaths. The permanent effects of the drug were seen at necropsy. In one case, the spinal cord was noted to be normal in the cervical region, and in the lower dorsal and lumbar regions definite pathologic changes were noted. It has been said by several observers that there is no irritation in the nervous system following the injection of procaine or its allied drugs and they compare this finding with irritation produced by the inhalation method on the mucous membranes of the bronchi and lungs. However, the author feels that there is a definite toxic effect on the spinal cord and the spinal nerve roots, which shows its effect both clinically and pathologically, the patients usually complaining of pain, and this finding can be explained by the pathologic study of the nerve roots.

CISTERN PUNCTURE IN NEUROSYPHILIS

J. F. CAMPBELL, M.D.
MUSKOGEE

The cistern puncture although originally recommended for therapeutic purposes has rapidly become increasingly more popular as a diagnostic procedure. This has come about mainly because the intraspinal route of medication for neurosyphilis has not proven the boon to humanity which was to be hoped for, and in only some types of the disease is it indicated. Since it is always necessary to make the diagnosis before we can choose our treatment, my discussion is from this phase only.

Those suffering from syphilis are, generally speaking, those individuals who can only devote a small portion of their time during the week from their daily duties for treatment, and not jeopardize their positions or jobs by devoting from twenty-four hours to a week in a hospital or at their homes to eliminate or diagnose neurosyphilis. And because it is generally agreed that any physician who discharges a patient who has been under treatment as cured without first checking the spinal fluid, is neglecting his duty to his patient, it behooves us to find a method of removing this fluid for diagnosis in the simplest way without causing the patient undue discomfort and undue loss of time. Because the cistern puncture possesses just such advantages over the lumbar route of approach, I have chosen to recommend this method as the method of choice for the diagnosis of neurosyphilis as an office procedure.

Scientifically speaking, the cistern puncture is a relatively new procedure but practically it is older than many other operative and diagnostic methods.

Obregia, in reporting 22 cervical punctures to the Rumanian Biological Society, is credited with performing the first cistern punctures in 1908. Because little publicity was attached to his article it was not until 1919, that Ayres and his associates described their method of obtaining spinal fluid from the cisterna magna, thinking that they were the first to use this method. In 1923, Eskuchen, working independently of Ayres and unacquainted with his work, described his indirect method of puncture. Since that time the different methods have been used by vari-

ous investigators, and one noteworthy modification has been made by Morris Lyons, who reports 679 punctures performed at the New York Post Graduate without any bad results. The various methods will be described in detail later.

In a collection of 10,000 cisterna punctures which have been published, there have been only 7 bad results, 5 of which were attributed to inexperience. In 1915, Schoenbeck collected 71 sudden deaths due to lumbar puncture which may in part be due to the little understood technical difficulties at that time. Now the lumbar puncture is an everyday procedure in every doctor's office. It is my opinion that the cistern puncture will have the same distinctive popularity in a few years.

INDICATIONS FOR USE OF THE CISTERN PUNCTURE

The cistern puncture may be used anywhere that the lumbar puncture can be used with some exceptions, which will be mentioned later. The patient who comes in for a routine examination can have a cistern performed in line with the other indicated tests, and thus not leave anything for conjecture in the diagnosis. Every patient who has ever had syphilis, whether treated or untreated should have the benefit of serological examination of the spinal fluid, because of the large per centage of tertiary cases which have a neuro-spinal involvement. A check should also be made at frequent intervals during treatment of C. N. S. cases in order to judge his response to medication.

Much has been written about the cistern puncture in treatment of neurosyphilis. It has been recommended as an avenue of treatment of arsphenaminized serum, or the introduction of a solution of mercury bichloride, and for the use of small amounts of arsphenamine. It has been a long known fact that simple drainage has a certain therapeutic response. Severe headaches often disappear after the first cistern puncture. A method of treatment which has given gratifying results in my hands is a method wherein a treatment of either silver salvarsan or of tryparsamid is given and in thirty minutes the cistern is performed and from 20 to 30 cubic centimeters of fluid withdrawn. These treatments are repeated at weekly intervals for about six treatments and after a rest of four weeks the course may be repeated. A recent paper by Morris Lyons of New York, also reports good results by this method. Whether the improvement is from medication drawn into the spinal fluid, or from the drainage, is still a matter of controversy.

OFFICE TECHNIQUE

The cisterna magna is a funnel shaped extension of the narrow posterior subarachnoid space and lies between the cerebellum and the medulla oblongata. This reservoir has an average depth of 1½ cm. and is at a distance of 2½ to 8 cm. from the surface of the neck. This cisterna magna then is situated superior to and on a level with the rim of the posterior portion of the foramen magnum, extending from the level of the axis upward. The foramen magnum has two small tubercles on each side across which stretches the transverse ligament. The aperture anterior to this holds the odontoid process of the axis, while the posterior aperture holds the cord, its meninges and the inferior portion of the fourth ventricle. The fourth ventricle is a diamond-shaped space about ⅓ to ½" high. It communicates above with the 3rd ventricle and below with the central canal. It also communicates with the subarachnoid space through the foramena of Lushle and Magendie.

In making the puncture the point of the needle traverses the following tissues in order: skin, superficial fascia, ligamentum nuchae, deep fascia, areolar tissue, occipitoatlanto ligament, dura mater and arachnoid. The space through which the puncture is made is bounded laterally by the trapezoid muscle, the complexus and the rectus capitus posterius minor. The roof is formed by the occipital bone and the floor is part of the ligamentum nuchae, posterior spine of the axis and part of posterior arch of the atlas.

As in the lumbar puncture, the position of the patient is as important as the technical procedure. The position I find best adapted to office procedure is a horizontal one in which the patient is placed on his right side for a right handed technician and on his left side for a left handed technician. The head is placed on specially constructed blocks to bring the cervical spine on exactly a horizontal plane. The shoulders are placed at right angles with his arms in front of him. The face is turned so that the patient is looking directly forward, because any deviation of the head will cause disproportion of the land marks.

The neck is aseptically prepared, some

of the hair clipped, if too long, and a specially designed triangular drape covering the head, which has an aperture for the passage of the needle. Sterile towels and sheets cover the shoulders and body. The operator wears gloves. Three land marks are followed: *namely*, the spine of the second cervical vertebra, the external auditory canal, and the glabella. It has been found that a section through these points will go through the cisterna magna.

Under novocaine anesthesia, and with the head in acute flexion, the needle is inserted through the skin midway between the spine of the second cervical vertebra and the occiput in midline. From here the techniques differ. By the Ayres' method the needle is directed along the line described, and when the resistance of the dura is encountered, the stylet is withdrawn. By the method of Estuken, the tip of the needle is directed upward to the base of the occiput, and when this is encountered, the stylet is withdrawn. The tip of the needle is then slanted downward along the base of the occiput to slide into the cisterna. The needle is held back when sliding into the cistern because of the danger of plunging into the medulla. By a newer method described by Morris Lyons, the needle is slanted upward after piercing the skin on a line directed one inch above the glabella. After the needle has traversed 2.5 cm. the stillette is withdrawn, and by gentle upward pressure on the handle the tip is made to slide into the cisterna magna.

When the cistern is reached, cerebrospinal fluid escapes from the free end of the needle. Only occasionally is it necessary to aspirate. The amount of fluid withdrawn may be anywhere from five to thirty cubic centimeters of fluid without untoward symptoms, although this varies with the different patients. When the requisite amount of fluid is drawn the needle may be withdrawn and the puncture site painted with collodion. The patient is then put in the upright position and in a few minutes is free to go.

One of the greatest assets of the cisterna punctura is the freedom from smyptoms and the almost total absence of headache. When the needle pierces the dura the patient often complains of slight lightning like pains on one side of the head, or a tingling or anesthesia in one of the extremities. Infrequently a patient will complain of a severe headache for a few hours after the puncture. There will be a stiffness of the neck for a few days but this is never enough to incapacitate the patient.

Of 50 punctures performed by the author on 41 patients, 30 were on patients either clinically diagnosed syphilis, or on patients who had been treated for syphilis. Of this number, 14 were found to have serologically positive cerebro-spinal fluids, 6 of the 14 had negative blood Wassermann's and positive spinal Wassermann's after a year or more of treatment. Eight of the 14 with positive blood and spinal fluid were advanced cases that fell into one of three classes:

1. Those unaware of the disease.
2. Those who had received insufficient early treatment.
3. Those who were Wassermann fast.

The contraindications of the cistern puncture are in cases of extreme age and extreme youth; any deformity in the region of the upper cervical vertebra and greatly increased blood pressure. In extreme age the dura is so friable that it may not promptly close, so that any hemorrhage of veins in that region may empty into the cistern through the puncture wound. In one of my cases—a woman over sixty years old—this occurred, so that my spinal fluid obtained was quite bloody. After twenty-four hours of rest in bed however, her condition had returned to normal.

The advantages of cistern puncture are many:

1. Freedom from after-symptoms. Because the cistern freely communicates with the 3rd ventricles and lateral ventricles where the fluid is secreted, and because a decrease in this fluid causes a decrease in the size of the brain, there are very few of the prolonged headaches that we see with lumbar puncture. In my cases there was not a single case which suffered any discomfort except a slight headache for a few hours after the puncture was done. Many claimed that they could not tell anything had been done.

2. Essentially an office procedure. All of my cases except one were done in the office and allowed to go home immediately. The one case was a hospital case which was already in bed. Because of the anatomical location of the cistern it is better for them to be put in the upright position as soon as the puncture is made.

3. The serological results and cell count are the same as in the lumbar region. In

our series of cases the serology and cell counts compared favorably with those done in the lumbar region.

4. In diagnosis of cord block, in meningitis and tumor of the spinal cord, the method gives a means of diagnosis never had before.

SUMMARY

Cistern puncture is described as a relatively safe office procedure in the diagnosis and elimination of neurosyphilis. Freedom from symptoms and time economy are considered as valuable to the doctor as to the patient. Fifty-two punctures are reported with an incidence of fourteen serologically positive spinal fluids in thirty selected cases.

The recommendation of this method of diagnosis is only on the condition that the operator have a certain amount of adequate training, either under some competant teacher or on a cadaver, because as in other highly technical methods, theoretrical dangers and all contraindications must be closely observed.

INEXPERT REFRACTION

John Green, Jr., and Carl Beisbarth, St. Louis (Journal A. M. A., July 9, 1932) have discussed with many colleagues their attitude toward eye testing. Is the task enjoyable or irksome? They have observed so far as possible, the methods employed by other men; they have tried to determine whether the older men have modified their methods of objective and subjective examination in the light of recent advances in technic; they have scrutinized their own methods and from time to time have made modifications, some of which have served as checks on prior methods and have been retained. As a result of these inquiries and observations, they have reached certain conclusions which seem to offer an explanation for some of the inexpert refraction that, from time to time, comes to the attention of every ophthalmologist. They present the following five reasons for inexpert refraction: 1. There is the ophthalmologist who is "not interested in refraction." If ophthalmology has any attraction for him, it lies in diagnosis, therapeutics and operations. 2. Some ophthalmologists have so many "irons in the fire" that they have "no time for refraction." The demands of teaching, the pursuit of original research, the writing of papers, the attendance at engagements outside of professional life and the exigencies of private and consultative practice (which may include otorhinolaryngology) render it physically impossible to "do refraction" (there simply are not enough hours in the day). Therefore this part of the practice is delegated to a medical assistant. 3. The attitude that "the game is not worth the candle" is held by some ophthalmologists. 4. Some men practicing in smaller communities have stated that they feel themselves in direct competition with optometrists. To maintain their standing with patients they think they are compelled to "speed up" the work of refraction, to adopt short cuts, to get the patient through in a day, in a word, to lower the quality of the work to optometric levels. Such a practice seems to us sheer folly, and its continuance constitutes a betrayal of professional integrity. By method and practice the ophthalmologist should secure the most accurate measurements, and it is a matter of no moment whether his result is attained in one day or ten. If the ophthalmologist is going to fall to optometric levels, he is doing far more than optometric propaganda could ever do to perpetuate in the public mind the utter confusion that now prevails. 5. Much inexact refraction emanates from eye clinics. Many of the clinics are undermanned, and the number of patients demanding refraction exceeds the number that can be tested accurately, so the policy of "roughing it out and letting it go at that" prevails. Happily, this criticism does not hold for some clinics in which the technical equipment is of the best and one or more men, skilled in refraction are paid for doing expert work. The authors emphasize that the beginner in ophthalmology should adhere strictly to the teachings and practices of the art and science of refraction laid down by our ophthalmologic masters. Such a course may not in the beginning bring to him a large clientele, but in the long run he will secure the confidence of the public, or at least, that part of the public that is sufficiently discriminating. In the meantime, he will have the consciousness of having done his work with precision and thus upheld the highest ideals of professional practice.

CONTROL OF AN OUTBREAK OF SCARLET FEVER

Maurice L. Blatt and Maurice L. Dale, Chicago (Journal A. M. A., April 23, 1932), call attention to the fact that numerous preventive measures, including isolation of the patient and disinfection of skin, throat, clothing, utensils and rooms, have been unsuccessful in the control of scarlet fever outbreaks. Failure may be attributed to ignorance of the etiologic factor and of the epidemiology of the disease. In recent years, knowledge of the pathogenesis of scarlet fever has progressed through advances in bacteriologic and immunologic research. Without closing St. Vincent's Infant and Maternity Hospital, an institution with an annual turnover of 300 per cent, it was possible to stop an outbreak of scarlet fever while the incidence was still high outside the institution. Taking cultures of throats, masking the adult hemolytic streptococcus carriers, isolating the infants with positive throat cultures and using an antiseptic in the nose and throat of those harboring hemolytic organisms, making Dick tests of all individuals, passively immunizing Dick positive contacts, and activity immunizing all Dick positive patients were the measures employed. Dick toxin for active immunization produced severe reactions in many older children and adults. As a result of using the technic for active immunization recommended by the Dicks, positive Dick tests became negative one month after the last injection, with one exception, and that one after the sixth. Three infants under 3 months of age, one of whom was 2 weeks old, gave a positive Dick test. They were not immunized and did not develop scarlet fever. In this small series, mutations in skin reactivity to the Dick toxin occurred within six months.

THE JOURNAL

OF THE

Oklahoma State Medical Association

Issued Monthly at Muskogee, Oklahoma, under direction of the Council.

VOL. XXV SEPTEMBER, 1932. No. 9

DR. CLAUDE A. THOMPSON.....Editor-in-Chief
525-526 Commercial National Building, Muskogee, Oklahoma.

DR. P. P. NESBITT.....Associate Editor
Medical Arts Building, Tulsa, Okla

Entered at the Post Office at Muskogee, Oklahoma, as second-class mail matter July 28, 1912.

This is the official Journal of the Oklahoma State Medical Association. All communications should be addressed to The Journal of the Oklahoma State Medical Association, 810 Manhattan Building, Muskogee, Oklanoma. $4.00 per year; 40c per copy.

The editorial department is not responsible for the opinions expressed in the original articles of contributors.

Reprints of original articles will be supplied at actual cost provided requests for them is attached to manuscripts or made in sufficient time before publication.

Articles sent this Journal for publication and all those read at the annual meetings of the State Association are the sole property of this Journal. The Journal relies on each individual contributor's strict adherence to this well-known rule of medical journalism. In the event an article sent this Journal for publication is published before appearance in the Journal the manuscript will be returned to the writer.

Failure to receive The Journal should call for immediate notification of the editor, 810 Manhattan, Building, Muskogee, Oklahoma.

Local news of possible interest to the medical profession, notes on removals, changes in address, births, deaths and weddings will be gratefully received.

Advertising of articles, drugs or compounds unapproved by the Council on Pharmacy of the A. M. A., will not be accepted.

Advertising rates will be supplied on application.

It is suggested that wherever possible members of the State Association should patronize our advertisers in preference to others as a matter of fair reciprocity.

PRINTED BY HOFFMAN-SPEED PRINTING CO., MUSKOGEE

EDITORIAL

THE PROGRESS OF CANCER RESEARCH AND TREATMENT IN THE PAST SEVENTEEN YEARS

Doctor Joseph Colt Bloodgood, has recently issued a lengthy statement covering various phases of cancer work since 1915. In a letter accompanying the statement he makes the following statement: "In *regard to cancer,*—in view of the fact that its earliest stages in the skin, mouth, and cervix are curable by the proper application of small amounts of radium, all agencies must unite in seeing that properly trained radiologists are supplied to every clinic using these small amounts of radium."

Doctor Bloodgood notes that in 1915, when he was asked to address the Academy of Medicine in San Francisco on cancer research activities throughout the world, there were so few cancer research workers that it was no trouble to write almost every one of them and go over the chief literature of their experimental work. The following is especially noted among the various stages and activities occurring in 1915. Cancer throughout the world was largely a disease which could be recognized clinically and from its gross pathology. In spite of the great advances made in the microscopic study of the cellular pathology of tumors since Muller, Virchow, and Cohnheim, the microscope was not often used in the operating room to make a diagnosis from frozen section. In all the operating rooms of the best clinics throughout the world the clinical and gross diagnosis of the operating surgeon was checked with the microscope in the pathological laboratory, and this material is still available for restudy and has been and is being restudied in a large number of clinics. At that time a small number of the medical profession had begun to appreciate the possible value of X-rays and radium in the treatment of cancer. In 1913 the American Society for the Control of Cancer was organized, but Bloodgood believes it is safe to say that the principles of the surgical treatment of cancer were pretty well established by 1895, thirty-seven years ago; deep X-ray and radium treatment between 1915 and 1920. The education of the public has been more or less continuous for almost nineteen years, therefore we have activities in pathology, in operations, in X-ray diagnosis and treatment, in radium and in education.

Bloodgood notes that less attention has been devoted in time, money, efforts and the daily personal thoughts and actions of the physician and dentist, and in the cooperative effort of all those agencies which have helped, and are helping the medical profession in the primary schools, and this is more important for prevention and cure than all other agencies. The activities in France, in England and in other foreign countries are practically similar to those going on in the United States. He doubts if any one in the United States dies of cancer without the benefit of surgeon, X-rays, or radium, but that the majority are not cured, many not even temporarily

relieved because of the lateness of the stage of the disease when the patient sought advice. He has personally studied thousands of histories of patients who sought the advice of the medical profession after they had been warned for some time; he noted the striking fact in those patients, whose malignant disease can be diagnosed clinically, that they have not had a recent diagnostic survey, and the chief cause of delay after they become aware of their symptoms has been ignorance rather than fear.

He concludes that what we need today, in every civilized country, is not so much more radium, or more cancer clinics, but more cases of cancer of the cervix in its early stages; that the majority of obstetricians and gynecologists of today believe that the greatest protection against cancer of the cervix is routine pelvic examinations after the birth of a child. He finds that in this country less than ten per cent of our mothers are so protected.

It is gratifying that he notes that cancer has remained well twenty or more years when the disease involved the skin, lips, oral cavity, larynx, breast, stomach, colon, and malignant tumors of bone and soft parts, this of course in the presence of proper treatment.

One of the chief obstacles to a greater progress today is the feeling among many members of the medical profession in all its departments, that the growth of the health departments—Federal, State, City and County—is really interferring with the practice of medicine in the following ways: Actually curtailing the activities of the medical profession and diminishing their income and influence. In the very few contacts I have made with the general practitioner in the small villages of England, I encountered the same point of view.

SOME PHASES OF FRACTURE WORK AND MALPRACTICE ALLEGATIONS.

We believe that practically all physicians should keep constantly in mind certain phases incident to fracture work, certain rather fixed rules, which if neglected, forgotten or overlooked, will surely in the end spell trouble of varying degree. We refer to the handling of fractures.

As a rule, most states require a practitioner to possess that degree of care and skill which a physician in the same or a similar locality would ordinarily exercise in the treatment of the same or similar condition. The moral to this is: if you are not positively certain of your ground—and there are many unsuspected pitfalls—call a consultant, and call one that is able to give you aid. Call no one merely because he happens to be a good, clever, "talky" fellow, but call one who knows the most about fractures in that particular locality.

It should be remembered, that, as a rule, a fracture, after proper reduction is easy, or nearly so. With that in view, and the patient complaining of excessive pain, beware and search for the cause and correct it if possible—in fact it must be corrected, regardless of the amount of trouble caused the physician.

X-rays, and a sufficiency of them are so essential, that often the mere failure to have them made, is liable to result in a verdict charging malpractice. Certain special fractures call for several pictures, and at certain times. They should be made in two positions, for often perfect alignment in one view will show an impossibility in the other view.

Readjustment of splints, pulleys, cord, and position must be as frequent as is necessary to maintain the proper position.

Occasionally a bad result may be anticipated immediately when the case is first seen. In such instances, and this does not necessarily apply to fractures, it will be well to frankly so state to those concerned, and it might be better still to make the statement in writing, in duplicate, stating the reasons, retain a copy, and be prepared for possible future unpleasant eventualities.

SHOULD VETERANS' BUREAU WORK BE FURTHER DECENTRALIZED

For a long time after the World war there was naturally great complaint that the government was taking too much time to render aid to those entitled to aid. At that time only service connected disabilities were considered. Since then the bars have been let down and the Veterans' Administration, under direction of the law, undertakes to render aid to all types of ex-soldiers without reference to when or how the disabilities were received—this with some slight exceptions. Perhaps one of the most puzzling decisions of the legal department was that permitting, not only treatment, but disability allowance to

those invalided due to using poisonous Jamaica ginger. The decision, it is said was based on the fact, not that the man used the material for its alcoholic content and effect, but as a medicine, and became poisoned as a result.

There has been a great deal of criticism of the bureau from time to time over various of its decisions and activities, and a great deal of this criticism comes from the medical profession. One of the uppermost thoughts of many medical men, not only in the bureau itself, but outside, is that the director should be a medical man, rather than a layman, looking only at the business aspects of the matter. Certainly the bulk of the hard work is done by the hundreds of physicians scattered over the country in various hospitals, regional offices, the central office and the diagnostic centers. Naturally a layman has little or no conception of the amount and gravity of this work. On the other hand any averagely equipped business man is capable of interpreting and carrying out the demands made by law as to the business aspects of the work.

To the writer, however, it seems that the most helpful thing, the most economical to the government, a time-saver to the beneficiary of the bureau would be to send him, in most cases to the nearest hospital or competent clinic for examination and necessary treatment. Instancing the unnecessary expense and avoidable loss to the government the reader's attention is called to a hypothetical case made up, a case which has often occurred. Railway fare, pullman, meals, going and returning, say from Corpus Christi Texas to the Muskogee hospital, amount to a fraction over one hundred dollars—this does not contemplate the cost of caring for the man while in the hospital, which may vary from the minimum of a week (this is rare) to a much longer time. No discrimination is made as to cases. If the man has the simplest condition, hemorrhoids, tonsillitis, the routing and handling is just as expensive as if he had a gastric ulcer or some other condition, which we know will be prolonged and troublesome as to treatment. It seems to the writer that the work of the Veterans' Administration could be further decentralized to the end that the man will be saved time and money as well as the government. The simplest cases should be handled in Corpus Christi by local men. These same local men care for the wives, mothers, brothers and relatives of the bureau beneficiary efficiently and rapidly. They have no long wait for a hospital bed. no expensive trip, prolonged hospitalization and similar irritating conditions to deal with; they simply see the doctor, get a diagnsis, the indicated treatment, and go about their business. The writer recalls one instance in which a consulting surgeon performs a tonsillectomy at the Veterans' Hospital, the man is sent to bed, observed for several days, and finally discharged with a railway and pullman ticket, plus the necessary orders for meals to last to his home. The same consulting surgeon goes to his office ,and aside from a coagulation test and Wassermann, as preliminary, he performs the tonsillectomy *in the office*, the man is observed for a time, then sent home by taxi or his own car. We are unable to see why so much trouble and expense should be engendered simply because the government is behind the case, the practicability and efficiency of the officials causing this condition must be subject to questioning. It seems that some practical means could be worked out by which those cases ordinarily known to be of probable short duration, could be handled in entirety in Corpus Christi. Speaking for Oklahoma, we can see no reason for sending the ordinary and average case from a town like, Mangum, Clinton, Woodward, Alva, Enid, Durant, McAlester, Vinita, Pawhuska, Blackwell and many others, not necessary to mention, to Muskogee, to be held an indeterminate length of time, finally operated for a triviality, then sent home. All over Texas and Oklahoma, and the other states comprising what is known as District 14, we know there are highly competent and efficient physicians and surgeons, and it seems to us that some form of arrangement could be made by which many of the men now sent on long and expensive trips for hospitalization for at least the simpler things, could not be given the same service at home, with more satisfaction to the men and vastly less expense to the government.

THE "TRUE" ECLECTIC PHYSICIAN

An editorial bordering upon the comic is noted in the National Eclectic Medical Association Quarterly, March, 1932. Under the caption "What is a True Eclectic Physician," the editor undertakes to answer, and, it will be only necessary to quote in part, one small, paragraph to give one an idea of the "covered wagon," "double-

bitted axe" age in which the remaining few eclectics live in order to appreciate the far-behindness of the entire mass.

"Freedom of thought, freedom of investigation are absolutely indispensable to the true eclectic physician. Mental despotism cannot be tolerated—hence the decisions of certain councils as to the acceptance of remedies, or the rejection of remedies by anybody cannot be accepted by a true eclectic physician. The eclectic physician does his own investigating of all remedies."

No doubt the allusion to "certain councils," refers to the Council on Pharmacy and Chemistry of the A. M. A., and, it is to laugh, to compare, for instance the investigations, conclusions and decisions of some poorly qualified eclectic physician to those of the eminent and super able committee composing the A. M. A. Council. This council is composed of men from the faculties of great universities and schools, yet its opinion must not be accepted unless some poor, biased man, unfitted from the very start to scientifically study the complexities of drugs, their actions, reactions and results, agrees that the decision is a correct one. The writer recalls that in approximately 25 years, or since its existence the decisions of this council has stood the fiery test of time. Many men, some in good faith, others obviously with an ulterior motive, have undertaken to overthrow their decisions. It is not recalled that a single victory has followed their attacks—on the contrary scores of frauds, rascalities and impossibilities have been unearthed, and the physician and public thereby protected. Often prolonged and highly technical investigation was necessary in order to arrive at the truth, but in the end the right prevailed. For one, we feel a sense of dependence upon our council and will continue to do so. Of course, there is no objection to any individual studying any problem of materia medica, but it will be seen at a glance that he is very poorly equipped to perform that function.

Editorial Notes—Personal and General

DR. JAS. L. SHULER, Durant, is reported improving after a severe illness.

DR. C. N. BERRY and family, Oklahoma City, spent the month of August in California.

DR. G. E. STANBRO, announces the opening of his offices, 1215 Medical Arts Building, Oklahoma City.

DR. R. Q. ATCHLEY, Tulsa, will attend the clinics of Dr. Willis Campbell at Memphis, during September.

DR. EARL D. McBRIDE and family, Oklahoma City, spent the latter part of August at Cottonwood Lake, Colorado.

DR. JOEL T. WOODBURN, Parsons, Kansas, and formerly of St. Louis, has located in Muskogee, and is associated with Dr. F. W. Ewing.

DR. HALSELL FITE, Muskogee, spent the months of August and September at Lake Belletaine, Minnesota, at the family summer home.

DR. SAMUEL R. CUNNINGHAM, Oklahoma City, attended the meeting of the American Orthopedic Association in Spokane in July. He gave three lectures, one on "Fractures of the Lower Elbow," "Vertebral Injuries," and "Fractures of the Lower Extremities."

PREGNANCY, we have heretofore noted, was due to only one cause, but Dr. M. O. Shivers, Colorado Springs, (Page 343, Journal, Oklahoma State Medical Association, August, 1932) states: "Many have noted that the administration of thyroid extract and iodine in some form to sterile women has resulted in pregnancy." This will naturally place the name of the Coloradean in the hall of fame.

ADAIR COUNTY PHYSICIANS ably entertained visiting physicians at Watts on the Illinois river, August 3rd. A most substantial meal consisting of a fish fry, corn on the cob, and in other styles, salads, etc., coffee and desert, made up a splendid dinner. After dinner a program was rendered as follows:

Veterans Administration—Dr. L. H. Webb, Medical Officer in Charge, U. S. Veterans' Hospital, Muskogee.

Anesthesia—Dr. C. A. Thompson, Muskogee.

Pediatrics—Dr. C. E. White, Muskogee.

Urology—Dr. S. D. Neely, Muskogee.

The bulk of the heavy work fell upon Dr. I. W. Rogers of Watts.

SOUTHEASTERN OKLAHOMA MEDICAL ASSOCIATION, held a meeting at Durant, June 23rd. The following program was given:

Invocation—Rev. C. A. Denny, Pastor First Christian Church, Durant.

Welcome Address—Dr. H. B. Fuston, Bokchito.

Response to Welcome Address—Dr. R. C. Huckaby, Valliant.

Public Health and Taxation—Dr. Chas. M. Pearce, McAlester.

Diabetes From the Standpoint of the General Practitioner—Dr. C. D. Strother, Sherman, Texas.

The Leukocyte Count as a Criterion in the Diagnosis and Prognosis of Certain Infectious Diseases—Dr. J. M. Thuringer, Oklahoma City.

Sarcoma of the Eye with Case Reports—Dr. L. C. Kuyrkendall, McAlester.

Diagnosis of Brain Tumors and the Present Day Method of Treatment—Dr. Harry Wilkins, Oklahoma City.

Hypertension—Dr. B. B. Coker, Durant.

AUTOMOBILE DEATHS seem to be affected by the depression. One wonders if there are not some good features to the depression on reading that in Oklahoma City in 1930, there were seventy-six deaths, while in 1931 there were only fifty-five. In 1930 there were fifty deaths in Tulsa, and in 1931 there were only thirty-three. We say give us more of that kind of "depression."

Oklahoma City annually, under auspices of the Kiwanis club, stages a "safety first" demonstration, composed of many floats in a parade, in order to call attention to the dangers of automobile driving, accidents, etc.

According to Associated Press figures two hundred forty-five people were killed July 4th, in the United States. The figures do not include those fatally injured, and who died later. While this summary shows a great improvement over the past year, it should be improved upon. There were 119 motor vehicle deaths, 90 due to drowning, 10 fireworks fatalities, and 26 from other causes. Six youths in Butte, Montana, were blown to shreds when they ignited a case of dynamite to celebrate the 4th.

—o—

DOCTOR RANSOM T. CASTLEBERRY

Doctor R. T. Castleberry, pioneer physician of Ada, died July, 1932. He was born in Georgia in 1856, and has practiced medicine in Pontotoc County for thirty-five years.

Burial was in Rosedale Cemetery, Ada.

—o—

THE END OF TWO MEN

The following story by C. W. Richards, as told by Irving S. Cobb over the radio on Friday, April 1, 1932.

This morning I saw the name of a man in the papers whom I knew, when he was alive and on earth, as well possibly as any man knew him. He had very few friends or associates. A few years ago he died and many columns were written in the papers throughout the country about his death. The only thing they had to tell about him was that he had piled up and left forty million cold dollars. When he went out, there was no one who was sorry he was gone. There was nobody to weep at his grave. There was not a man, woman, or child who shed a tear over his going. In this life he had done nothing for anyone else. His chief aim and purpose was to pile up and amass forty million cold dollars. The only reason his name appeared this morning was that there was notice of some form of court action to quiet title in a piece of property which he left.

I want to contrast his life with that of an old time doctor who lived in a very small community in the west.

If he were measured by the amount of money he left, he would be considered a complete failure because he did not leave a red cent. But, he lived and practiced his profession in this little community for forty years. His patients were not among the rich or the socially elite in the community but his patients were among the poor, the down-trodden, the drunkard, the scarlet woman of the street, and those who had nothing to pay for his services.

He maintained a little office on the street of this village until his own resources had been exhausted and he had to quit his little office on the street and take a room up over the village livery stable—dark, dirty, and dingy. He had no money with which to pay a sign painter to paint a sign for him, so he took a rough pine board and some paint and, in his own crude way, he scrawled on the board, "Dr. Thomas Riley, his office is upstairs now." He took this pine board with this crude sign and nailed it to the hitching post to the livery stable. He went about his ministry of mercy day by day.

Nobody paid him any attention much, until finally one day he had been missing for two or three days and the curiosity of the people of the community became aroused and they climbed up that old, rickety, dusty, dirty, stairway to his room. When they reached there, they found it locked. They battered the old door down and there they found that head, with its tousled white hair, resting on a wrinkled pillow and his hands crossed across his breast. Two nights before he had driven the old spavined mare to the sulky, through the sleet and the snow, twenty miles up in the mountains to administer to someone who was suffering up there. On his way back he had contracted pneumonia and had gone out there, alone, in that old, dingy room without the ministry of any hand whatever.

They prepared an old pine box in which to bury him. They placed it on a cheal hearse and bore it to the cemetery. There was no great formal procession of carriages to follow his body to the grave, but there was a great company of the poor, the outcast, and the drunkards who followed his body to its last resting place, and they were genuine mourners. On the way to the cemetery, they gathered some frostbitten grasses and the last of the wild flowers and some of the old leaves, and they carried them to his grave as their floral tribute to him.

When they returned from his funeral, they sold the old spavined mare and sulky to pay his funeral expenses. Some of those he had helped while he was alive and who loved him for what he had done for them, wanted to erect a monument or a rock slab at his grave. They went into his room and got his account book, took it out and opened it up and, possibly with the last spark of intelligence and with the last feeble bit of energy left in his body, he had written opposite each account, "Paid in full."

Then the village drunkard, sober for once, had a bright idea. So he went one night, took up that hitching post with his sign on it, carried it out to the cemetery and erected it at the head of his grave and there it stood until the sleet and the snow and the cold of the winter and the rain and the sunshine and the wind of the summer had worn away the last vestiga of the paint from that old board. It read, "Dr. Thomas Riley, his office is upstairs now," and I am not sure but what it is.

ABSTRACTS • REVIEWS • COMMENTS AND CORRESPONDENCE

INTERNAL MEDICINE

Edited by
E. Rankin Denny, M.D.
809 Medical Arts Building, Tulsa

A Report of Six Cases of Flaxseed Sensitization with Review of the Literature. Grant, Lucile Ruffe. The Journal of Allergy, July, 1932. Page 469.

Flaxseed is an exceedingly irritating substance to those who become sensitive to it, and it can cause asthma or gastrointestinal symptoms from inhalation of particles of the substance or from its ingestion.

The sensitization of this substance is often very marked, and the reaction violent.

In all the cases reported, the sensitization was to flaxseed itself, not linseed oil, linen, or substances made from flax fiber, although cases sensitive to the latter may exist.

Cases sensitive to flaxseed usually show good results if the material can be completely removed from the patient's environment; if this is not possible, good results may be obtained by careful desensitization.

The skin irritation of the workers in the flaxseed crushers of the linseed oil mills is, in almost all cases, a very mild condition. The trauma to the skin from rubbing it with rough substances, like burlap, and the heat probably are also important etiologic factors. None of the patients are described as complaining of other allergic manifestations, and the condition is so universal that I doubt whether it can be described as allergic.

The Effect of Injection of Nonspecific Protein On The Pain of Ulcer and on Gastric Secretion: A Clinical and Experimental Study. Vanzant, Frances R., Snell, Albert M. The Journal of Clinical Investigation, July, 1932. Page 647.

In dogs the intravenous injection of foreign protein produces first a brief lowering in the amount and acidity of the gastric juice and then a more prolonged rise in the activity of the secretory mechanism.

Section of the vagus or splanchnic nerves did not materially influence the response of the gastric glands to injections of foreign protein except for the fact that immediately after bilateral vagotomy the secondary increase in secretion was abolished.

In cases of ulcer, the injection of foreign protein was frequently followed by a gratifying reduction in the amount of pain and distress. This clinical improvement was not associated with any consistent lowering of gastric acidity and there was no correlation between the degree of acidity found at any one time and the amount of pain complained of. There was some indication in the patients of the presence of the same biphasic swing in secretion that was found in dogs.

There was some evidence to indicate that more lasting relief of symptoms can be expected in those cases in which the secretion is reduced after treatment.

Only three of the seventeen patients treated obtained relief which lasted for some time, while four had temporary relief. Four of the patients experienced such brief periods of relief and the febrile reactions were so unpleasant that it did not seem advisable to continue the treatment. The condition of the ulcer of three patients grew worse during the period of treatment and observation, although all of these obtained some symptomatic relief. The symptoms of the remaining three patients were aggravated by the treatment.

The clinical and experimental data here presented have left them with the impression that injections of foreign protein are not likely to be of much value in the treatment of peptic ulcer except in occasional cases. The discomfort entailed did not justify the results obtained.

They had no exact information which would warrant making guesses as to the mechanism which in some cases produces prompt relief of pain and discomfort.

The Effect of Liver Therapy On The Neurologic Manifestations of Pernicious Anemia. Baker, Benjamin M., Jr., Longcope, Warfield E., and Bordley, James. The American Journal of The Medical Sciences, July, 1932. Page 1.

A detailed report on the changes in the nervous system of 44 cases of pernicious anemia affected by liver and liver extract, 39 of which showed signs and symptoms of definite involvement of the nervous system. They emphasize the fact that large amounts of liver must be consumed over long periods of time before great improvement can be elicited. In practically a third of the cases treated for less than six months, improvement was noted; in more than half, the signs and symptoms were improved in the cases treated for more than six months. In practically 60 per cent of the cases in which there was an advanced subacute combined degeneration who were treated for more than ten months, there was marked improvement. The symptoms and signs that improved most noticeably were referable to disturbances of cutaneous and muscular sensibility, and to flaccid pareses.

It is suggested that some of these symptoms and signs may be dependent upon changes in the peripheral nerves. It is to be emphasized that to secure this improvement large amounts of liver or liver extract should be used over long periods of time.

Treatment of Lobar Pneumonia By Felton's Serum. Cowan, John, Harrington, A. W., Cruickshank, R. Cuthbertson D. P., and Fleming, John. Lancet London, July 2, 1932, Volume 223, Page 8.

The paper is based on a study of 155 cases of lobar pneumonia, 137 of which were treated with

Felton's serum. The cases were observed during 1930 and 1931. During this observation it is to be noted that only eighteen cases were used as controls.

Among the 44 treated cases of type I pneumonia, two deaths occurred; of 45 cases of type II pneumonia eight deaths occurred. There were five deaths among the six type III pneumonia cases treated. There were four deaths resulting from 37 cases of type X. Five cases were not typed and one of these died.

The most striking observation is "The mortality of type II infections has been little if at all effected."

Note: From the author's observation one would conclude that Felton's serum is of no benefit in type II pneumonia but it is not in keeping with the observation of those who have used Felton's serum here in America. This work is to be criticized because the cases in which serum was used did not alternate numerically with an equal number of control cases. Baldwin of the Cornell Division of the New York Hospital, in a carefully controlled observation showed that the mortality rate in serum treated cases of type I pneumonia was only 5 per cent versus a 25 per cent death rate in the control group; and in the serum treated cases of type II, a mortality of only 28.5 per cent versus a 51.7 per cent death rate in the group deprived of the benefit of serum.

SURGERY AND GYNECOLOGY

Abstracts, Reviews and Comments from LeRoy Long Clinic
714 Medical Arts Bldg., Oklahoma City

Painful Stumps After Amputation (Les Douleurs des Moignous D' Amputation), By Rene Leriche, La Presse Medicale, June 1, 1932.

All who are interested in the original and important work of Leriche and his associates on the "surgery of pain" will find in this article much "food for thought."

Vigorous attention is called to the pitiable lot of a class of unfortunates whose sufferings are so extreme that they are entirely incapacitated; and there is a no less vigorous indictment of the medical profession for the light and careless and usually utterly worthless service rendered such sufferers.

The phenomena after amputation are considered under several headings. I shall take them up in the order employed by the author and shall give a frief summary in each case of his arguments and conclusions.

1. Normal Phenomenon: The Illusion of the Presence of an Amputated Member (Le Phenomene Normal: L' Illusion de Presence du Membre Ampute). This illusion is present in practically all cases of amputation. It is explained on physiological grounds. There are atrophic changes in all the tissues of the stump, with the exception of the nerves. The nerve makes an effort to advance, but is hindered. As a result, there is proliferation and piling up of the neurilemma, these masses involving the axis cylinders. The centripetal axis cylinders (sensory nerves) remain always excitable, and continue to conduct to the centers in the brain the sensations that they receive. After amputation they continue to carry their excitations to their habitual centers. The result is that the patient who has had an amputation of a member always feels the presence of it. When the principal nerves of the stump are infiltrated with a solution of noyocain the patient does not feel the presence of the amputated member. This would seem to be proof that the phenomenon is not of psychic origin. It has a physiological and anatomical basis, and is regarded as being a normal phenomenon.

2. Pathologic Phenomenon: Painful Illusions of the Absent Member (Le Phenomene Pathologique: L'Illusion Douloureuse du Membre Absent). Unfortunately, there are many patients whose troubles do not stop with the sense of the presence of the amputated member, but have, in addition the sense of pain in it. This may be explained by the fact that repair is not accompanied by the same phenomena in all individuals, regardless of whether the operation has been an amputation or some other surgical procedure.

In the case of the patient who has had an amputation, and who progresses in a normal way, there is constant sensation of the presence of the amputated member, but without pain; in this case (painful illusions) there is the same sensation of presence, **but with pain**—sensations of burning, stabbing, distortion, pulling. The pathology is the same; the same physiological functions are involved. Painful phenomena after aseptic amputations as well as after infections. The pain that follows is an expression of individual peculiarity. The cerebral interpretation is identical but to a stronger excitation the brain responds with painful sensations.

In such a case, inject the nerve involved with novocain and the pain is temporarily relieved.

Excise the over-developed nerve tissue in the stump (neuroma), and the pain is relieved until another one forms—and there will always be another.

Section the nerve at a distance, and immediately suture the sectioned ends together to avoid a neuroma at this point; the pain often disappears entirely; the neuroma is without nerve connection (le Neurome est enerne).

3. Another Pathologic Phenomenon: Sympathetic (Vaso-motor) Pain of the Stump (Autre Phenomene: La Douleur Sympathique du Moignon).

In this case the neuroma (neurome) is sclerotic, irregular, and encroaches upon neighboring structures. Often the neuroglia invades muscles and connective tissue (comme l' a moutre Nageotte), and thus is created all sorts of incessant excitations which cannot be classified neurologically. These excitations go out by all sorts of centripetal ways and reach the spinal ganglion. Arrived there the excitations may be continued to the brain, but often the most of them are reflected to the periphery by the sympathetic under the form of vaso-motor and trophic phenomena consisting of obscure and ill defined sharp pains that do not correspond to any fixed neurological distribution. The pain is in the stump, and often extends to its root, into gluteal region, or neck, sometimes to opposite side, sometimes to distant areas—and as the physician does not understand, the patient is often regarded as a simulator, an exaggerator, or a drug addict. The pains are not usually violent, but constant, sharp,

grueling, and there is frequently cyanosis of the stump with ulceration.

These phenomena are not of psychic origin.

Inject novocain solution about the neuroma, but not into it. Infiltrate the surrounding structures with novocain. The pains cease for an hour or two. Liberate the neuroma by dissection, but leave it in place. For five or six days there is no pain, then, when the contacts are re-established, the pains re-appear, in aggravated form.

Periarterial sympathectomy is usually followed by durable relief.

Ramisection nearly always gives relief.

4. Another Pathologic Phenomenon: Great and Painful Hyper-Esthesia of the Stump (Autre Phenomene Pathologique: La Grande Hyperesthesia des Moignons).

This is illustrated by the history of a patient. In 1920 a young captain asked for a consultation. The chief complaint was extreme diffuse hyperesthesia of the stump of an amputated arm. The arm had been crushed about the elbow by a piece of an exploding shell. It was amputated. A short time later there were pains in the stump. They became worse and worse. About a year and a half after the amputation the pains had taken the predominant type of hyperesthesia which was now so severe that the least touch or the least disturbance from whatever cause produced great agony. Leriche says: "I patiently listened to his history, for the patients who suffer are, contrary to what it thought habitually, patients to listen to with care, if one does not wish to err in the interpretation of their pains. Nearly always it is what they tell you that gives the key to the therapeutic problem."

On being asked to show the stump, the patient begged that it not be examined, notwithstanding he had made a journey of 475 kilometres for the very purpose of having an examination. He was overcome by the immediate dread of the pain. He finally agreed to uncover it provided the sleeves of coat and shirt were jerked off suddenly.

The stump was morphologically perfect. Intense hyperesthesia was the only symptom. No cyanosis, no oedema, no evidence of vaso-motor trouble. The touch of a finger caused great pain, but when the stump was once grasped it could be squeezed brutally without much pain. In putting on shirt and coat the same process of sudden movement was carried out in a reverse way. The sleeve being held open, he thrust the stump into it with striking suddeness. And when it was finished he said: "You see what I have suffered for sixteen months. I cannot bear it longer, and they say that I exaggerate. If you cannot do anything for me I had rather die than continue such a life."

This is happily an exceptional type which Leriche shows is associated with a hyperemia of the meninges of the cord. There is particularly an arachnoiditis. The hyperesthesia is like that seen in meningitis.

In this type, the excitation via the sympathetic system may go to more or less distant areas. Leriche makes the statement that there is no physiological impossibility of its extension to the optic tract.

The pains of stumps which are of various types and appear difficult to classify can be differentiated if one starts with the phenomena which are present at the level of a sectioned nerve. All the pains are due, in the final account, to the presence of a neuroma normally constituted. If the potential of growth is reduced, the neuroma, frequently called by Leriche "neuroglioma," is but a simple cicatricial layer which causes no trouble except the illusion of the presence of the amputated member. If the potential is great the neuroma is voluminous, with the axis cylinders piled up into balls—"pelotonnees"— on the inside of it, and the intrinsic excitations produce pain.

5. Etiologic Conditions and Clinical Aspect of Painful Stumps (Conditions Etiologiques et Aspect Clinique des Douleurs des Moignous).

There is no extrinsic determining etiological factor in connection with painful stumps. They are found after all kinds of amputations: after amputation with aseptic evolution as well as after those which suppurate; after those that have been sutured and those reunited by second intention.

Generally, the pains do not appear at once after operation. They may not appear for several months or several years.

Clinically, there are three types: the type with fixed topography in the absent member, the sympathetic type, and the type with superficial hyperesthesia. The types are sometimes mixed.

In all cases a careful examination will show the presence of one or several neuromata in the stump, but their presence does not indicate what should be the proper treatment. The neuroma is an essential part of the pathology, but it is necessary to analyze the symptoms produced by it in order to determine the kind of treatment.

In one case there is constant pain in the absent member—soreness, burning, pulling. The patient has no truce.

In a second case there is burning, cutting pain in the stump, often in paroxysms. The wearing of an artificial leg is impossible.

In a third case life is torture, and often the end is morphinism or suicide.

Here is an example:

An officer of 30 years had the thigh torn away by a shell, February 23, 1916. Twelve hours after regularization of the stump. In May a new correction of the stump. Almost at once atrocious, burning pain outer border of foot and in the heel. In July, 1916, great sciatic exposed and infiltrated with alcohol by the advice of M. Sicard. Pain worse. In January, 1917, reamputation by M. Gaudier. No relief. In November, 1918, by the advice of M. Claude resection of sciatic. Aggravation, morphinisation. In August, 1920, constant hyperesthesia of thigh, buttock and back. Posterior radicotomy. Slight relief, but persistent violent pain in stump, projected to absent toes. Excision femoral branch small sciatic to relieve it from cicatricial pressure. Temporary partial relief, but quickly terrible pains re-appeared. Two years later the patient killed himself.

C. Treatment of Painful Stumps (Traitement des Douleurs des Moignous).

What ought to be done in order to escape such lamentable stories? The procedure must be based upon a minute analysis of each particular case, which may be in connection with a pure neuroma,

a peripheral sympathetic type, or meningo-radicular type.

On the other hand, it is easy to say what ought not be done.

First of all, one ought not to look lightly upon the statements of patients who complain of pain in their stumps. It is an easy attitude, but it is inhuman and antimedical.

An early examination should be made with care.

The patient must not be permitted to become a morphinomaniac.

Reamputation must not be done.

Do not inject alcohol into the nerves.

Do not use diathermy.

Do not employ radiotherapy.

Do not do a resection of the neuroma, purely and simply. Leriche has operated upon 30 patients because of pains in the stumps. All of them had had neuromata removed. None of them was cured.

Here is a history of why these things—the injection of alcohol into the nerve, the reamputation of the stump, the simple excision of the neuroma, the employment of radiotherapy, the use of diathermy—should not be done:

In January, 1924, Leriche saw a young man wounded July, 1916, followed by the amputation of the leg the next day; rapid healing. About the seventh day lancinating pains like electric currents in stump. Reamputation in a hospital at Neuilly. No relief. Early in 1917 injection of alcohol into nerve by Prof. Roger at Marseilles. No relief. A little later resection of neuromatous sciatic by Prof. Silhol. Failure. Then radiotherapy. Failure. Patient does not think there was an operation in 1918, but not sure. In 1919 disarticulation of the knee. Pains not relieved.

In 1920, still at Marseilles, femoral sympathectomy without result.

In 1921: Amputation of thigh without result. Then reamputation. Pains the same—burning at end of stump, intolerable superficial hyperesthesia. November, at Lyon, new resection of sciatic by M. Durand. Made worse. Tried to drown himself in the Rhine but was rescued. Sent to Leriche. Posterior radicotomy. Relief for about a year. Two years later at Nimes with relapse. Cardotomy by M. Cantaloube. No further knowledge of the unfortunate.

And yet many of these patients can be relieved if a proper early operation is done. These two conditions prevail: early operation; good operation.

But how to choose?

Do not forget that some of these patients suffer in the absent member, others in the stump, and still others nearly everywhere.

For pain of fixed topography in the stump, a high neurotomy with immediate suture of the ends of the nerve at point of section may be a good procedure.

For the sympathetic (vaso-motor) type, one would reasonably think of periarterial sympathectomy or ramisection.

If the injection of novocain solution into the nerve entirely relieves the pain for an hour, there is a good chance to succeed by neurotomy. If such injection does not relieve the pain, infiltrate the other nerves of the stump because more than one nerve may be involved. If still no relief, infiltrate the solution along the principal artery. If this relieves the pain sympathectomy will probably succeed. If none of the procedures brings relief, think at once of cordotomy, as the next operation.

Examples:

First Type: Amputation of thigh. Pain in foot, Injection of nerve relieves. Dissect out sciatic 10 cm. above end of stump, if possible. Section nerve. Suture ends together. Inject 1 or 2 c.c. phenol into central end. There is good chance of success. Do not do simple ablation of neuroma. It sometimes relieves, but the chances are it will not.

Do not forget that more than one nerve in a stump may be affected.

Second Type: Amputation of the thigh. Stump oedematous, cyanotic, painful, with ulceration. In the recent case, periarterial sympathectomy. If suspicion of mixed type, neurotomy at the same time.

Late Case: In the lower extremity, most often best to do ramisection or extraperitoneal lumbar ganglio-nectomy. A corresponding operation for superior extremity. When the pain is not intense, and when the vaso-motor element predominates, periarterial sympathectomy often suffices, but in such a case it is better to add neurotomy with suture as before described, because the types ar frequently mixed.

Third Type: Great and diffuse coldness of stump, with distant radiation, sometimes involving opposite side. Here one must not depend upon peripheral operations: "their hour has passed (leur heure est passee)." One must go straight to the cord and do a posterior radicotomy with ablation of the spinal ganglions, or a cordotomy. In particularly rebellious cases, Leriche suggests the possibility of excision of the sensory centers of the cortex.

The more experience one acquires in the surgery of pain, the more one sees the obscurities of the problem.

Great efforts are still to be made in order to avoid failure. It is an aim to pursue. It is worth the trouble (De grands efforts sont encore a faire pour arriver a ne plus achouer, C'est un but a poursuivre. It en vaut la peine).

—LeRoy Long.

The Foundation of an Endocrine Clinic for the Study and Treatment of Amenorrhea, Uterint Bleeding, and Sterility. Brooke M. Anspach, M.D., and Jacob Hoffman, M.D., Philadelphia, Pa. American Journal of Obstetrics and Gynecology. Vol. XXIV, No. 1, July, 1932.

A tremendous amount of experimental work has been done in the field of endocrinology as applied to abnormal menstruation, amenorrhea and sterility, and now we are beginning to see practical application in treatment of these conditions in the human being. This is possible because of more accurate diagnosis of the actual dysfunction and the availability of more potent and pure endocrine therapeutic agents.

This article is a very good summary of the

status of this very important field at the present time. While it is not completely comprehensive, it outlines the situation in a good manner. worthy of verbatim repetition because of their

The conclusions which these authors draw are worthy of verbatim repetition because of their fundamental importance.

The anterior pituitary and the follicular hormone tests are important diagnostic aids in estimating ovarian function.

The picture presented by the endometrium, has proved the most important single observation in estimating ovarian function.

The demonstration of anterior pituitary hormone in the blood and urine seems to be a reliable indication of primary ovarian failure.

A positive follicular hormone test is not an invariable index of full ovarian activity, since large amounts of this hormone may be found in some cases of amenorrhea and during the first stage of the natural menopause. A negative reaction however is an accurate index of follicular inactivity.

The administration of a potent ovarian and pituitary preparation, at the proper phases of the cycle gives promise of value and may be a step forward in the treatment of menstrual irregularities and sterility.

What we need most is a more potent anterior pituitary extract.

Thyroid products remain as possibly one of the most reliable and potent preparations at our command today and should always be tried when the basal metabolism is low.

The roentgen ray, when judicially applied, seems to be an important therapeutic agent in combating endocrine dysfunction with its associated manifestations.

Comment: This article is well worth while read in its entirety by those who are interested in following the progress made in the study and care of the physiological defects so frequently encountered in gynecological practice.

—Wendell Long.

Spinal Anesthesia—A Summary of Clinical and Experimental Investigation with Practical Deductions. Bower, Clark, Wagoner and Burns, S. G. & O., June, 1932. Vol. 54, P. 882-897.

The risk associated with spinal anesthesia has never been fully recognized because of a misinterpretation of the true cause of the drop in blood pressure and a lack of appreciation of the early effects of intraspinal anesthetic on the nerves of respiration. This has interfered with the placing of spinal anesthesia in its proper category. We have always known that the extent of upward diffusion determines the degree of shock. As in ordinary shock the blood pressure falls, the skin becomes pale, the respiration shallow, but no one has written of having seen a suffused or congested intestine during a laparotomy under spinal anesthesia. Shock is found in those cases in which the anesthetic ascends higher than the topmost origin of the splanchnics.

The knowledge that cardiac dilatation with thoracic stagnation of blood may be an accompaniment of spinal anesthesia makes it possible for us to understand more clearly the catastrophes that have occurred in the past and to outline a routine to follow for selecting and protecting patients in the future who are candidates for spinal anesthesia.

Outline for Reducing Anesthetic Risk in Spinal Anesthesia:

I. Selection of patients—

Estimation of myocardial reserve most important. Contra-indications: if any two of the following are present spinal should not be given.

1. Weak or distant heart sounds.
2. High diastolic pressure, 110 or over.
3. High pulse pressure, 70 or over.
4. Electrocardiograph tracing positive for myocardial disease.

II. Development of technique—
1. Actual instruction.
2. First induction under supervision.
3. Familiarity with drug.
4. Selection of patient, see I.

III. Selection of drug—
Least toxic.

IV. Early detection of high effect.
Artificial respiration should begin within one minute after respiratory center is affected.

No outline can in any way take the place of experience, but these authors believe that it will help those comtemplating using spinal anesthesia to avoid the catastrophes which are not uncommon in one's early experience. The proper evaluation of the risk is most important but some patients will react unfavorably under spinal anesthesia on the operating table. This happens where the myocardial damage has been of such a character that it escapes pre-operative detection. It is this type of case where it is essential that high effect be recognized early, and the authors advise the use of the respirometer for this purpose. This is of more help than cutaneous tests for height of anesthesia. The respirometer indicates to the surgeon at a glance the depth of the patient's respirations. If they have diminished he reminds the anesthetist to instruct the patient to perform deep breathing. If voluntary forced respiration cannot be accomplished by the patient, then forced respiration should be carried out by artificial means. It is here that the Drinker respirator, where available, is of the greatest use. Any of these procedures combats collapse by increasing intrapulmonary and intrathoracic pressure, preventing over-dilatation of the large venous channels and assisting the heart to empty by pressure from the distended lungs. The anoxemia sometimes following spinal anesthesia has a decided effect on the respiratory center and the oxygenation of the heart muscle. There can be no objection to the use of adrenalin or ephedrin. However, as these authors point out, neither of these drugs has prevented cardiac dilatation or relieved respiratory embarrassment in their experimental work. In sudden collapse the intravenous injection of adrenalin should be used in addition to forced inspiration.

Safe anesthesia is the preservation of epicritic and protopathic sensation above the sixth rib. Above this level cardiac and respiratory embarrassment may develop.

Up to this time there is no known method of absolutely preventing death from spinal anesthesia, but artificial respiration offers the best

means for combating respiratory embarrassment and the fall in arterial pressure.

—LeRoy D. Long.

How Much Thyroid Tissue Should Be Removed In Toxic Goitre? By Frank H. Lahey, M.D., Boston, Mass. Annals of Surgery, Vol. XCV, April, 1932, Page 529.

The amount of thyroid tissue to be removed in toxic goitre varies quite widely in different individuals and different types of goitre. It is of very great importance that the essential medium be attained in thyroidectomy for toxic goitre between too great removal of thyroid tissue and production of myxedema and too little removal and establishment of persisting hyperthyroidism. It is evident, therefore, that one cannot generalize about the amount of thyroid tissue to remove in terms of proportion of the entire gland. One cannot say that he customarily removes three-fourths, four-fifths or five-sixths of the entire gland, and be in a sound position. The attitude which everyone seeks to maintain in patients with hyperthyroidism is to remove enough thyroid tissue to produce a complete and lasting cure of the hyperthyroidism, but to leave enough thyroid tissue so that myxedema is not present.

In this article Dr. Lahey discusses the amount of thyroid tissue to be removed in toxic goitre from three aspects—the age of the patient, the character of the thyroid tissue to be removed, and the technical question of the removal of the thyroid isthmus. Due to the needs for thyroid secretion in development, care must be exercised in thyroidectomy for hyperthyroidism in children that too much thyroid tissue is not removed and myxedema produced.

Due to the relative inactivity of the thyroid in elderly patients, care must be exercised lest radical thyroidectomy produce a high percentage of myxedema in such patients.

Good sized remnants of thyroid tissue must be left after subtotal thyroidectomy when, following the pre-operative administration of iodin, involution of the gland has occurred.

Radical removals of thyroid tissue must be done and but small remnants left in patients with uninvoluted thyroids, if one wishes to produce cures in patients with this type of uninvoluted thyroid gland. The clinical features indicating the presence or absence of involution are important.

Good sized remnants of thyroid tissue must be left in subtotal thyroidectomy for hyperthyroidism associated with hyperinvolution or multiple colloid adenomatous goitre.

Complete removal of the isthmus of the thyroid and baring of the trachea do not produce any disturbing amount of post-operative tracheitis. Attempts to leave segments of the thyroid isthmus over the trachea make one tend to leave too large remnants of thyroid tissue particularly in primary hyperthyroidism. Complete removal of the thyroid isthmus with premeditated baring of the trachea and with extensive removal of thyroid tissue from the lateral lobes of the thyroid leaves a safe amount of thyroid tissue over the recurrent laryngeal nerve, and the parathyroid bodies, and makes possible the radical removals of thyroid tissue which are often necessary to bring about lasting cures in hyperthyroidism.

—LeRoy Downing Long.

Thyroid Crisis. By E. I. Greene and J. M. Greene, Chicago, Ill. Annals of Surgery, Vol. XCV, No. 4. April, 1932, Page 537.

1. Thyroid crisis is one of the most serious complications of hyperthyroidism.

2. As a rule this condition occurs in the primary toxic or exophthalmic goitre.

3. Thyroid crisis usually occurs in patients known to have hyperthyroidism but in whom no treatment has been sought or in whom inadequate treatment has been instituted.

4. Thyroid crisis may occur in individuals in whom there is no suspicion of thyrotoxicosis.

5. A crisis may come on immediately after operation or several days later.

6. Acute hyperthyroidism may be ushered in by physical fatigue, by physical stimulation, as a result of an intercurrent infection or appear after some surgical condition often trivial.

7. Measures not aimed to relieve the hyperthyroidism should be postponed until after thyroidectomy has been performed.

8. Adequate pre-operative therapy will in the majority of cases prevent post-operative acute thyroidism.

9. The picture of crisis may appear suddenly with no premonitory manifestations, or make its appearance slowly with definite symptoms.

10. The mechanism whereby a crisis is set into motion is not known.

11. The condition must be recognized early and proper therapy instituted immediately or death will frequently result.

12. Treatment consists of iodine, fluids, glucose, and morphine.

13. After recovery from a crisis, surgical intervention should be done with caution, waiting sufficiently long enough to get the patient in proper physical condition.

LeRoy Downing Long.

Some Practical Aspects of Hypothyroidism. Scott D. Breckinridge, Lexington, Ky. American Journal of Obstetrics and Gynecology, Volume XXIII, No. 6, June, 1932.

This is a presentation of 25 case histories of hypothyroidism given to show that slight to moderate degrees of hypothyroidism may be very important causal factors in a number of gynecological and obstetrical conditions. The author points out that menorrhagia is much more frequent than amenorrhea, and he feels that hypothyroidism is one of the most frequent causes of menorrhagia and metrorrhagia which should be excluded before resort is had to the curet, radium, X-ray or abdominal section.

—Wendell Long.

UROLOGY and SYPHILOLOGY

Edited by Dr. S. D. Neely, M.D.
Muskogee, Okla.

Chronic Kidney Conditions in Infants and Children, Wm. M. Happ, Los Angeles, Calif.. California and Western Medicine, May, 1932.

Acute pyelitis constitutes one of the most frequently encountered infections in infancy and childhood. He states that he does not consider in this article acute pyelitis, as they respond readily as a rule to medical treatment. He cites 11 cases of recurrent and chronic pyuria in children, a condition often resistant to treatment. The infection is dependent upon some urinary obstruction interferring with the proper drainage of urine in a great majority of cases. Early diagnosis is highly important to obtaining satisfactory therapeutic results. In all of the reported cases there was a scarcity of symptoms referable to the urinary tract. Infants and small children do not complain of pain in the kidney region. Eneuresis and frequency of urination are the most common symptoms noted, and they are of no especial diagnostic importance as they are found in some normal children. Gastro-intestinal symptoms were outstanding and present in nearly all cases. Attacks of fever, vomiting, anorexia, nervous irritability, restlessness in sleep, abdominal distension diarrhea. This condition was found associated with ileo-colitis in several of the cases. Improvement in the urinary infection in some was noted on therapy of the gastro-intestinal condition. This frequency of association should lead to a careful study of the urine in these gastro-intestinal cases. Relief of symptoms was noted upon removal of the obstruction. The value of cystoscopy is emphasized in all pyuria cases which do not respond to medical treatment in a few weeks. Acute and acutely transient pyuria, he states, are not adapted to cystoscopy, and that it was not possible to set an arbitrary limit to medical treatment, but that each case should be considered separately. The youngest child in this series cystoscoped was 13 days of age, and the age, he states, is of no importance in cystoscopic therapy. General anaesthesia is rarely necessary. Improvement in drainage and stimulation of ureteric peristalsis are the important results of correct instrumental therapy. Removal of foci of infection elsewere should be considered.

The Arsphenamines and Neurosyphilis—Editorial —New England Journal of Medicine, July 7, 1932.

This editorial states that for many years there has been a misbelief among physicians that the use of arsenicals during the primary stages of syphilis leads to an increased incidence of neurosyphilis, that treatment especially if inadequately given would force the spirochetes and their toxins deeper into the tissues where they rest for many years to reappear later in the form of infection of the nervous system. That these organisms reach these tissues and remain dormant for sometime is undisputed, but treatment in the primary stages of the disease is another matter. In analyzing a series of 500 cases at the Mayo Clinic, Oleary and Rogin conclude there is no evidence to warrant the presumption that arsphenamines predisposes to or induces the development of neurosyphilis. Even small amounts of arsphenamines are better than none as a protection of the nervous system of patients with acute syphilis, whereas early treatment in adequate amounts increases still further the percentage of patients whose nervous system is not affected.

Persistent Perineal Sinus Cured by Transurathral Injection of Silver Nitrate. Eric Stone, M.D. New England Journal of Medicine, June 23rd, 1932.

A typical patient with prostatism, and having the cystoscopic appearance of enlargement of posterior commisure and right lateral lobe was operated (perineal prostatectomy) and developed a persistent perineal sinus, this was operated on after local manipulations with sounds, indwelling catheters irrigations and injections of silver nitrate were of no avail, an external urethrotomy, which healed for two weeks, when it again become infiltrated, red, pain and local bulging and again the sinus was reopened, again it refused to heal. Patient was urethroscoped and the sinus opening on the floor of the urethra located, a fulguration only succeeded in enlarging the urethral opening, later an ejaculatory catheter was introduced into the urethral side of the sinus and 10% silver nitrate injected, immediately copious irrigation with boric solution was used to control the severe urethral burning as some of the nitrate solution had regurgitated into the urethra. This sinus healed and has remained healed and the patient symptomless.

Prostatic Resection—Editorial — New England Journal of Medicine, June 30, 1932.

In this editorial is a very good review of the literature on this subject, this method going back as far as 1834. During the past few years, Bumpus, Davis, McCarthy, Stern, and others have perfected instruments to cut with electric current and coagulate at the same time, and a wave of enthusiasm for prostatic resection is spreading over the country, spurred on by demands of the patient that they be relieved without an "operation." Is this demand justified? Have we here a substitute for prostatectomy? Dr. Hugh Young, one of the conservatives, holds that the method should be employed on only a limited number of cases, it requires anaesthesia, sacral or spinal, takes as much time as prostatectomy, anaesthesia in a poor surgical risk is perhaps the single greatest factor in mortality of prostatectomy. Median bars can be removed in this way, the large lateral lobes, so frequently met with is another matter. The author doubts that the channel tunneled through the prostate with these instruments gives as complete and lasting relief as removal of the lobes. Many brilliant results will be reported, but at the same time many failures will be encountered. The great danger in a new method of this kind is that it will be employed by those not qualified to meet the situation, they should be able to select cases suitable, and meet any complication that may arise. In early hypertrophy and median bars, and some malignancies resection offers a new way of relieving obstruction but should be attempted only by those trained in urethral instrumentation and experienced in surgery of the prostate.

Mistakes in Diagnosis and Treatment of Syphilis, Austin W. Cheever and Wm. D. Wheeler, New England Medical Journal.

These authors state that diagnostic and therapeutic errors are at times unavoidable but there is no justification for avoidable mistakes. In the practice of syphilology lack of knowledge constitutes a grave public health problem and is responsible for the spread of a serious disease. They cite 11 cases of mistakes made, stating that they clearly demonstrated that the physician who first sees these cases should know a few of the rudiments of the diagnosis of primary syphilis, the dark field examination to determine the presence of the spirochete pallida. (2)They were not syphilis conscious, seldom suspecting syphilis, failed to recognize its manifestations. (3) Their knowledge of the therapeutics of syphilis is tragically inadequate. (4) They are totally unaware of any progress made in diagnosis treatment and laboratory research. He suggests a list of "lest we forget" hints which he states should be on every physician's desk and to be read at frequent intervals, these are (1) Consider every genital ulcer as syphilitic unless definitely ruled out by repeated negative dark field examinations. (2) Remember that extra-genital chancres are not uncommon, and may be located anywhere on the body. (3) Bear in mind that a chancre may be hidden in the female in the vagina. A painstaking search should be made in every case. (4) Have routine laboratory blood tests, Wassermann, made on all of your patients, and do not forget that one negative does not rule out syphilis. (5) Have the blood of every pregnant woman examined for syphilis early in pregnancy. A positive blood test would indicate immediate treatment for the expectant mother and incidentally for the foetus. (6) The time to discover a congenital syphilitic is before the child is born, treat the syphilitic mother in pregnancy, all through pregnancy, and then continuing the treatment of the child from its birth for a number of years. (7) Treatment in all cases of syphilis should be prolonged, intensive when necessary. One negative blood test during treatment does not mean cure. About two to five years is necessary before a probable cure is effected. (8) Examination of the spinal fluid is essential in every case of syphilis, and is often the only means of detecting incipient neuro-syphilis. (9) Always suspect syphilis, in any of its stages it may simulate other diseases. (10) Whenever in doubt concerning the diagnosis of syphilis consult a syphilologist.

BOOK REVIEWS

The Practical Medicine Series, Comprising Eight Volumes on the Year's Progress in Medicine and Surgery. These are a series of 1931, and each contains an abstract of the particular literature culled from various authors over the world and from a multitude of artcles bearing upon the particular subject concerned.

Obstetrics, By Joseph B. DeLee, A.M., M.D., Professor of Obsterics, University of Chicago Medical School; Attending Obstetrician and Medical Director, Chicago Lying-in Hospital and Dispensary.

Gynecology, By J. P. Greenhill, B.S., M.D., F.A.C.S. Attending Gynecologist, Cook County Hospital; Associate in Obstetrics, Northwestern University Medical School Price $2.50.

Dermatology and Syphilis, By Fred Wise, M.D., Professor of Dermatology and Syphilology, New York Post Graduate Medical School and Hospital of Columbia University, and Marion B. Sulzberger, M.D., Associate in Dermatology and Syphilology, New York Post-Graduate Medical School and Hospital of Columbia University.

Urology, By John H. Cunningham, M.D., Associate in Genito-Urinary Surgery, Harvard University Post-Graduate School of Medicine. Price $2.25.

General Therapeutics, By Bernard Fantus, M.S., M.D., Professor of Therapeutics, University of Illinois College of Medicine; Member, Revision Committee and Louis B. Kartoon, B.M., M.D., Instructor of Medicine University of Illinois College of Medicine. Price $2.25.

Neurology, By Peter Bassoe, M.D., Clinical Professor of Neurology Rush Medical College of the University of Chicago.

Psychiatry, By Franklin G. Ebaugh, A.B., M.D., Professor of Psychiatry, University of Colorado Medical School; Director, Colorado Psychiatric Hospital; Associate Director Division of Psychiatric Education, the National Committe for Mental Hygiene. Price $2.25.

Doctor: Journal advertisers deserve your patronage and co-operation.

The Cedars Maternity Sanitarium

Seclusion Home and Hospital

Cheerful, Homelike Surroundings for Unfortunate Young Women.

Ethical Physicians and Nurses, Licensed

Ravinia Stop. Dallas-Ft. Worth Interurban

Address, 111 Ravinia Drive DALLAS

PHONE 6-1207

OFFICERS OKLAHOMA STATE MEDICAL ASSOCIATION

President, 1932-33, Dr. Robert M. Anderson, Shawnee.

President-Elect, Dr. T. H. McCarley, McAlester.

Secretary-Treasurer-Editor, Dr. C. A. Thompson, 525-526 Commercial National Building, Muskogee.

Meeting Place, Oklahoma City, May 15-17-1933.

Delegates to A. M. A.: Dr. McClain Rogers, Clinton, 1933; Dr W. Albert Cook, Tulsa, 1934; Dr. Horace Reed, Oklahoma City, 1933-1934.

STANDING COMMITTEES 1932-1933

Scientific Work. Dr. R. M. Howard, Chairman, Oklahoma City; Dr. P. P. Nesbitt, Tulsa; Dr. A. B. Chase, Oklahoma City; Dr. C. A. Thompson, Muskogee.

Public Policy and Legislation: Dr. J. S. Fulton, Chairman, Atoka; Dr. Horace Reed, Oklahoma City; Dr. Fowler Border, Mangum.

Medical Defense. Dr. L. S. Willour, Chairman, McAlester; Dr. Wm. Gallaher, Shawnee; Dr. F. M. Adams, Vinita.

Medical Education and Hospitals: Dr. LeRoy Long, Chairman, Oklahoma City; Dr. A. L. Blesh, Oklahoma City; Dr. J. M. Byrum, Shawnee.

Medical Economics. Dr. A. Ray Wiley, Chairman, Tulsa; Dr. W. H. Bailey, Oklahoma City; Dr. J. Hutchings White, Muskogee.

SPECIAL COMMITTEES 1932-1933

Tuberculosis Study and Control: Dr. L. J. Moorman, Chairman, Oklahoma City; Dr. F. B. Baker, Talihina; Dr. David W. Gillick, Shawnee.

Crippled Children: Dr. Earl D. McBride, Chairman, Oklahoma City; Dr. Wade Sisler, Tulsa; Dr. T. C. Sanders, Shawnee.

Necrology: Dr. Ellis Lamb, Chairman, Clinton; Dr. O. S. Sommerville, Bartlesville; Dr. J. A. Hatchett, Oklahoma City.

Study and Control of Venereal Diseases: Dr. Shade D. Neeley, Chairman, 625 Commercial National Bldg., Muskogee; Dr. Robert H. Akin, Medical Arts Bldg., Oklahoma City; Dr Henry S. Browne, 616 Medical Arts Bldg., Tulsa.

Study and Control of Cancer: Dr. James Stevenson, Chairman, Medical Arts Bldg., Tulsa; Dr. Frank H. McGregor, Mangum; Dr. E. S. Lain, Medical Arts Bldg., Oklahoma City.

SCIENTIFIC SECTIONS

General Medicine: Dr. R. C. Pigford, Chairman, Tulsa; Dr. Lealon Lamb, Vice-Chairman, Clinton; Dr. E. Rankin Denny, Secretary, 809 Medical Arts Bldg., Tulsa.

General Surgery: Dr. F. L. Carson, Chairman, Shawnee; Dr. R. L. Murdock, Vice-Chairman, Oklahoma City; Dr. L. C. Vance, Secretary, Ponca City.

Eye, Ear, Nose and Throat: Dr. Chas B. Barker, Chairman, 224½ West Oklahoma Ave., Guthrie; Dr. Marvin D. Henley, Vice-Chairman, Medical Arts Bldg., Tulsa; Dr. Wm. L. Bonham, Secretary, Medical Arts Bldg., Oklahoma City.

Obstetrics and Pediatrics: Dr. Geo. R. Osborne, Chairman, 801 Medical Arts Bldg., Tulsa; Dr. C. V. Rice, Vice-Chairman, 6th floor Barnes Bldg., Muskogee; Dr. Carroll M. Pounders, Secretary, 1200 North Walker, Oklahoma City.

Urology, Syphilology and Dermatology: Dr. Jas. Stevenson, Chairman, Medical Arts Bldg., Tulsa; Dr. C. P. Bondurant, Vice-Chairman, Medical Arts Bldg., Oklahoma City; Dr. Shade D. Neeley, Secretary, 6th floor Commercial National Bldg., Muskogee.

STATE BOARD OF MEDICAL EXAMINERS

Dr. D. W. Miller, Blackwell, President; Dr. J. M. Byrum, Shawnee, Secretary; Dr. W. P. Fite, Muskogee; Dr. H. C. Weber, Bartlesville; Dr. W. T. Ray, Gould; Dr. L. E. Emanuel, Chickasha; Dr. Frank McGregor, Mangum.

STATE COMMISSIONER OF HEALTH

Dr. Geo. N. Bilby, Oklahoma City.

COUNCILORS AND THEIR COUNTIES

District No. 1. Texas, Beaver, Cimarron, Harper, Ellis, Woods, Woodward, Alfalfa, Major, Dewey, Dr. O. E. Templin, Alva (Term expires 1934).

District No. 2. Roger Mills, Beckham, Greer, Harmon, Washita, Kiowa, Custer, Jackson, Tillman. Dr. Frank H. McGregor, Mangum. (Term expires 1935).

District No. 3. Grant, Kay, Garfield, Noble, Payne, Pawnee. Dr. Paul B. Champlin, Enid. (Term expires 1935).

District No. 4. Blaine, Kingfisher, Canadian, Logan, Oklahoma, Cleveland, Dr. A. B. Chase, Oklahoma City. (Term expires 1935).

District No. 5. Caddo, Comanche, Cotton, Grady, Love, Stephens, Jefferson, Carter, Murray, Dr. D. Long, Duncan. (Term expires 1935).

District No. 6. Osage, Creek, Washington, Nowata, Rogers, Tulsa. Dr. W. A. Howard, Chelsea. (Term expires 1935).

District No. 7. Lincoln, Pottawatomie, Okfuskee, Seminole, McClain, Garvin. Dr. Wm. M. Gallaher, Shawnee. (Term expires 1933).

District No. 8. Craig, Ottawa, Mayes, Delaware, Wagoner, Adair, Cherokee, Sequoyah, Okmulgee, Muskogee. Dr. F. M. Adams, Vinita. (Term expires 1933).

District No. 9. Hughes, Pittsburg, Haskell, Latimer, LeFlore, McIntosh. Dr. Leonard S. Willour, McAlester. (Term expires 1933).

District No. 10. Johnson, Marshall, Coal, Atoka, Bryan, Choctaw, Pushmataha, McCurtain. Dr. J. S. Fulton, Atoka. (Term expires 1933).

CLASSIFIED ADVERTISEMENTS

The

Tulane University

of

Louisiana

GRADUATE SCHOOL OF MEDICINE

Approved by the Council on Medical Education of the A.M.A.

Postgraduate instruction offered in all branches of medicine. Courses leading to a higher degree have also been instituted.

A bulletin furnishing detailed information may be obtained upon application to the

DEAN

GRADUATE SCHOOL OF MEDICINE

1430 Tulane Avenue

New Orleans, La.